



33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1.

Telephone : WHItehall 9233 (12 lines). Telegrams : "Trazette Parl, London" BRANCH OFFICES

GLASGOW: 87, Union Street Central 4646
 NEWCASTLE-ON-TYNE: 21, Mosley Street . . . Newcastle-on-Tyne 22239
 MANCHESTER: Century House, St. Peter's Square Central 3101
 BIRMINGHAM: 90, Hagley Road, Edgbaston Edgbaston 2466
 LEEDS: 70 Albion Street Leeds 27174
 BRISTOL: 8, Upper Berkeley Place, Clifton Bristol 21930

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Editor : B. W. C. Cooke, Assoc. Inst. T.

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Moderation in the T.U.C.

THE Trades Union Congress at Brighton ended on September 10, having produced a series of resolutions not differing greatly from the views put forward by the General Council in its report to the Congress. The report quoted the conclusions of a committee which inquired into the state of joint consultation in the nationalised industries. One of the main points was that railwaymen particularly were concerned at the lack of authority delegated to local officials and the absence of provision for reference upwards. Questions of welfare, the committee said, still tended to dominate discussions. Questions of efficiency, although gaining in importance, at present came second. Railways were mentioned again in the course of discussions on a motion which criticised the level of investment in industry. Mr. J. S. Campbell, General Secretary of the National Union of Railwaymen, took the opportunity to point out that the railways needed at least £500,000,000 immediately, especially for new locomotives, carriages, and wagons. A resolution which called on the General Council to make representations to the Chancellor

of the Exchequer for tax reliefs in the next Budget on expenses incurred in travelling to and from work was put forward by the Association of Cinematograph & Allied Technicians. Such a concession, canvassed so frequently in the past, might well assist the railways by encouraging people to live farther from their work and thus increase public travel. Perhaps the most important feature of the Congress came on the last day, when the Electrical Trades Union moved a resolution expressing opposition to any form of wage restraint. A delegate from another union, speaking the day before, had declared that employers could afford to increase investment and pay higher wages as well. The policy of the T.U.C. has been one of restraint, and, no doubt, had this resolution succeeded, repercussions might have been felt in most industries. The motion was defeated by some 4,500,000 votes to 3,000,000, but the strength of the vote for the motion may well hold a threat to future wage stability.

Another Loan for East African Railways

THE East African High Commission has raised a £5,000,000 loan to finance general improvements to the East African Railways & Harbours and buy rolling stock. Only £4,000,000 was offered for public subscription in the United Kingdom, as £500,000 had been reserved for subscription in East Africa and another £500,000 taken up for Colonial Government funds. As we commented editorially last week, East African Railways & Harbours capital development has required the authorising of almost £60,000,000 in new loan capital since 1948. By 1960 another £30,000,000 may need to be raised to meet what is one of the greatest expansions in transport development in a British territory this century. Of the £59,300,000 at which the programme now stands £23,000,000 has been raised in the United Kingdom and East Africa and £2,390,000 has been lent by the Foreign Operations Administration of the U.S.A. Of the remaining £33,900,000, £5,000,000 is represented by the new loan and the balance will probably be required during 1955, 1956, and 1957. The scheduled works include general improvements (£15,400,000), locomotives and rolling stock (£19,100,000), and construction of new lines and realignments (£11,400,000).

British Rails for Canada

THE Pacific Great Eastern, the provincially-owned system in British Columbia, has plans for extensions and track renewal which would mean an annual requirement of some 10,000 tons of steel and other equipment during the next four or five years. This forecast was made in London last week by Mr. E. M. Gunderson, Vice-President of the railway, and Special Trade Representative in the United Kingdom for the Government of British Columbia, when announcing a \$1,000,000 order, specified in the Contracts & Tenders columns of this issue, which has been placed with the United Steel Companies for rails and angle iron. Mr. Gunderson said that subject to price, delivery, and other matters being satisfactory, he might consider placing immediately another order for approximately the same amount. The Pacific Great Eastern runs from Squamish, on the Pacific Coast, north of Vancouver, to Prince George, on the Prince Rupert line of the C.N.R. Projected extensions southwards to Vancouver and northwards towards the Peace River Country would greatly increase its usefulness. The existing line is being relaid with 85-lb. in replacement of the 65-lb. rail.

Steel Production

THE steel industry in the United Kingdom has been breaking production records with a regularity broken only by the recent labour troubles at Margam and the mechanical breakdown at Consett. August production averaged 325,600 tons a week, an annual rate of 16,932,000 tons, compared with 15,155,000 tons for August of last year. This achievement, difficult in a holiday month, should compensate to some extent the lower production in July. Demand for steel at home and abroad has been heavy and

stocks have been reduced. In some cases, delivery dates have had to be extended as orders increased. Further capacity is expected to become available later this year or next year, and imports, now running at a level only 25 per cent of that in 1953, could be increased if necessary. Production in Germany in August was 1,561,000 tons, compared with 1,227,000, in August, 1953. Stocks in the European Coal & Steel Pool countries have not been depleted to any great extent, and it is evident that European manufacturers of locomotives and rolling stock are not likely to be embarrassed by shortages of steel. In this country steel plate is still insufficient to meet demand and imports of plates and sheets have doubled in quantity during the year.

Overseas Railway Traffics

CANADIAN Pacific gross earnings for June were \$36,016,490, compared with \$40,729,889 for June, 1953, a decrease of \$4,713,399. Working expenses fell from \$38,454,059 in June last year to \$34,125,586. In July, gross earnings rose to \$36,064,130, while working expenses fell to \$34,057,514. The corresponding figures for July last year were \$41,738,599 and \$39,138,127. Aggregate gross earnings for the seven months to July 31 were \$242,526,334, compared with \$273,224,124 for the first seven months of 1953. Aggregate net earnings for the same periods were \$10,560,708 and \$13,107,824, a decrease of \$2,547,116. Antofagasta (Chili) & Bolivia traffic receipts for the week ended July 23 were £80,634. In this week there was a one-day holiday on the Bolivian section in 1954, which affects comparisons with the figure of £105,875 for the corresponding week of 1953. The aggregate receipts from January 1 to August 27 were £2,661,442, compared with £3,325,798 for the corresponding period of 1953. In the weeks between July 23 and August 27 the exchange rate for bolivianos remained, in both years, at 538·14 to the £. For pesos, the rate in 1954 rose from 440·60 to 494·30. In 1953 the rate remained steady between 345·60 and 350·20.

Restoration of Railways in India

WHEN India and Pakistan were separated in 1947, the former was left with a route-mileage of railway totalling 33,566 miles, but what is probably not realised is that no fewer than 855 route-miles had been dismantled during the 1939-45 war to provide material for overseas military lines. It was natural, therefore, that priority was given by the new Government of India in its construction programme, to the restoration of this large mileage. It was distributed between 26 sections of line, 17 of 5-ft. 6-in. gauge totalling 538 miles, four metre-gauge with 71 miles, and five narrow gauge, 246 miles. On April 1, 1951, when the first Five-Year Plan was launched, only one 73-mile broad-gauge section had been replaced, but it is expected that at the end of the five years, in 1956, 12 sections with an aggregate mileage of 498, or 75 per cent of the total dismantled, will have been restored, at a cost of about £4½ million. Already 286 miles have been reopened for traffic, and a further 24 miles should be again in service by the end of this year. These mileages are, however, little more than one-quarter of the total length of track laid in new constructions and that relaid as restorations, all these works costing over £18½ million since 1947.

Moving Fifeshire Coal

THE Scottish Region has in hand an extensive programme for development of marshalling yard accommodation to expedite transit of the increasing production from the Fife coalfields. A considerable increase in the facilities at freight marshalling yards at Kelty and Oakley already has been provided, and work is proceeding on construction of the new marshalling yard at Thornton which eventually will be capable of dealing with 3,000 wagons a day. A fourth large project, for the construction of a marshalling yard at Alloa at an estimated cost of some £500,000, has now been authorised, as existing facilities are inadequate for the expanding coal production in the

locality, to which the new mine at Glenochil will make substantial addition. The principal features of this new yard will be the provision of 15 sorting sidings with five reception sidings arranged in parallel, and in its layout many of the most modern facilities for speedy yard operation will be incorporated. When completed the yard will be capable of dealing with 1,500 wagons a day.

Cheap Evening Tickets

THE decision to withdraw cheap evening ticket facilities from the Southern Region of British Railways marks, for that Region, the end of an experiment. It has been argued many times that given cheap fares and good train services the railways could pay their way by attracting considerably more traffic. Both conditions have been, in general, complied with in the Southern Region, but it is evident, from the fact of the withdrawal, that the extra traffic has not been forthcoming. When cheap evening fares were introduced in January last the British Transport Commission made it clear that the scheme was an experimental one, and this experiment is continuing in the other Regions of British Railways and on London Transport, although it is known that in London a loss is being incurred. The commercial risk taken by the Commission will have been justified if it demonstrates public reaction to given conditions, and a further experiment will commence in the Southern Region on October 6 as cheap evening fares cease on October 2. The new experiment is with cheap fares for shopping purposes, available between morning and evening traffic peaks. The commercial results will be watched with interest.

Passenger Traffic Increases in Europe

THE Centre d'Information des Chemins de fer Européens in Rome, the information office of the International Union of Railways, has compiled statistics showing the growth of passenger traffic between 1937, the last "normal" prewar year, and 1953. As between these years the greatest increase is recorded as being in Turkey—14,000,000 to 62,000,000, or 343 per cent. This presumably refers to the whole country, not only to Turkey-in-Europe. In Asia Minor, the increase would seem to be the result of the opening of new lines and growth of population, combined with a rise in spending power caused by industrialisation. There is also the growth of Istanbul. Other increases of over 100 per cent for 1953 on 1937 are: Luxembourg (175 per cent), Italy (167), Sweden (157), Austria (129), Denmark (114), and Portugal (104). Besides a rise in the standard of living, with holiday travel as one of its results, and increase in population, housing, which involves more or longer travel to work, would be one cause of the rise in passenger journeys. In some countries, notably Italy, Austria, and Luxembourg, travel by foreign tourists, including transit traffic, is an important factor.

"Great North" Centenary

THE former Great North of Scotland Railway was unique in that it was the only Scottish Company that included the word "Great" in its title. Paradoxically it was the smallest, and its route mileage was only 334 when it became part of the London & North Eastern Railway in 1923. Authorised in 1846 from Aberdeen to Inverness, its construction was delayed by financial difficulties, and the opening to passengers of the first section, the 39½ miles from Kittybrewster, near Aberdeen, to Huntly, the centenary of which occurs on September 20, was the outstanding railway event in Scotland of 1854. The company never succeeded in completing its line to Inverness, and the western portion of the route eventually became part of the Highland Railway. Several branches were constructed by nominally independent undertakings, and heavy commitments to these subsidiaries resulted in a long period of financial stringency. Recovery began in the 1880s, and reached its peak in the closing years of the century with train services characterised by very smart operation. The Great North was a pioneer in the introduction of railway-

owned motor buses, and by 1912 the route mileage of these feeder services was 150, or nearly half the company's railway mileage.

An Eccentric Strap Adrift

FACING points at Goswick Station, North-Eastern Region, were the scene of a third derailment on October 28, 1953 though the cause differed entirely from the two earlier cases in August, 1907, and October, 1947, caused by inattention on the footplate. In this instance the eccentric strap of the middle cylinder valve motion of a three-cylinder engine came adrift and a portion hanging down caught in the f.p. stretcher, opening the closed point tongue and derailing the coupled and following wheels. The train was not deflected and the consequences were nothing like those of the Blea Moor derailment of April 18, 1952, where facing points were forced open by a detached brake rod. Colonel W. P. Reed's report is summarised on another page. He was satisfied with the design and condition of the main components of the valve motion, and concluded that the top bolt nuts of the strap could become unscrewed because there was no properly fitted split pin in position when the engine was examined before the run, although there might have been an undersized one which fell out. The importance of split pins being of correct size and in perfect order has been stressed recently, notably in the Blea Moor and Crewkerne accidents. Colonel Reed again emphasises the importance of attention to detail in fitting and examining at shed.

A Subsidy for the Railways

THE idea of a subsidy for railways in this country has long been attractive to many who see no way of making them pay their way, except by forgoing increased expenditure which they consider essential, as for high wages, or by effecting economies which they feel to be undesirable. The question of a subsidy for British Railways to cover the increases in wages desired by the railway trades unions has been raised recently. The National Union of Railwaymen last week was considering an approach to the Minister of Transport, Mr. John Boyd-Carpenter, with a view to securing financial help for the Commission so that the wages increases which were being sought could be granted; and elsewhere in this issue we publish a letter from Mr. C. R. Sweetingham, Press Officer of the N.U.R., in which he argues in favour of a subsidy, a course which we have consistently regarded as objectionable.

Government financial assistance to the railways in the form of a subsidy, whether open or hidden, is objectionable largely on two grounds: it removes the financial spur to efficiency from those responsible for the working of the railways; and, because a subsidy must be paid for by somebody, it is only robbing Peter to pay Paul. The first objection is a very real one. One of the wiser provisions of the Transport Act of 1947 was that the British Transport Commission should pay its way, taking one year with another. Without such provision it is certain that in the earlier days of nationalisation, in the prevailing political climate, a deficit would have been regarded as natural and inevitable year by year. With the increased amount of competition now facing the railways, a disposition to accept a deficit on their working might be a severe temptation.

The second objection to a subsidy remains valid in any circumstances. Railway transport is essential to the national economy, but there is no reason why it should not be paid for by those for whom it is provided. The unsoundness of "prestige" subsidies is seen in the case of some air undertakings, which are heavily subsidised by those who do not make use of them. There is the strategic aspect. Railways are strategically necessary; where, however, their existence is necessary for strategic and for no other reason there may be a case for a Government sub-

sidy on those grounds. There are very few such sections of railway in Great Britain. On the other hand, if transport users are to pay charges which enable British Railways to pay their way, the charges must not be such as to price the railways out of the market.

In the case of the wage negotiations now in progress between the Commission and the three railway trades unions, the gap between what the Commission feels it can offer in the way of increased wages, and what is asked for by the unions, might be as much as £15,000,000 in a single year, assuming the Commission offer to be the maximum consistent with avoidance of a deficit. The £15,000,000 therefore could be the amount of the deficit to meet which the subsidy is suggested. Until the report and accounts of the British Transport Commission are published for 1953, it is not possible to know exactly the financial situation of British Railways. For 1952, however, British Railways working receipts amounted to some £415,000,000, and their working expenses were some £378,000,000, so that net traffic receipts were about £37,000,000, allowing for a deficit of £2,500,000 on cartage services; they were able to make their proper contribution to the central charges of the Commission. The situation for 1953 seems likely to be less favourable, in view of increased expenditure last year, despite close budgeting in determining the amount of charges increases. It is probably worse still now. It is apparent that in the light of road competition, there are few freight rates or passenger fares which can stand an increase. There remains, therefore, only a reduction in expenditure to compensate for increases in wages. For some time now there have been discussions between the Commission and the railway unions on means of achieving such economies.

In his letter Mr. Sweetingham states that there are two obvious prerequisites for obtaining the co-operation of railwaymen in improving the efficiency of the railway. The first of these is a fair wage. It is putting the cart before the horse, he says, to tell railwaymen that there is "no money in the kitty" and that their only hope of better wages lies in participating in schemes which, they feel, are designed primarily to make them redundant. Whilst any scheme for improving the use of manpower is bound to cause personal inconvenience to a good many people, it is hard to share his view that redundancy on any appreciable scale can ensue. There are few of the more populous parts of Great Britain in which British Railways are not suffering from lack of manpower in almost every department, as is apparent from frequent reports. It might be argued that this is due to the low wages of railwaymen which enable other occupations with higher wages and more attractive conditions of work to compete successfully for labour. To raise wages on these grounds would in the present economic condition of the railways bring them to economic straits resulting eventually in unemployment. The fact remains that economy schemes which may involve redeployment of manpower in the various departments of the railways, by increasing efficiency, in the long run will better the position of the railways and enable higher wages to be paid.

Railwaymen must know where they are going, Mr. Sweetingham adds, and he intimates that modernisation, electrification, and so on, are measured by their consequences to individual railwaymen. Productivity commissions, he says, are inevitably regarded with suspicion. In the earlier days at least of nationalisation there was much talk of railwaymen sharing in the management of the railways, but these statements seem to show little faith in the good sense of railwaymen as a whole. There are, no doubt, many who have bitter memories of the past when wages were low, but it is difficult to believe that any intelligent railwayman cannot realise that measures to improve the efficiency of the railways eventually will be to his own benefit. There is scope here for the trades unions to enlighten some of their members.

As to the suggestion that the denationalisation of road haulage was done without the slightest consideration of transport efficiency, it is hard to see how this can affect the issue of making British Railways pay their way. It is

true that emulation between the Regions itself will not solve the problem of increasing efficiency, but it can go a long way towards doing so. It must be remembered that all railwaymen, and not only the lower-paid wages grades, are poorly paid in relation to men with corresponding responsibilities in other walks of life.

The General Secretary of the National Union of Railwaymen, Mr. J. S. Campbell, has said that a "decent wage structure" is a prerequisite of securing the co-operation of railwaymen for greater efficiency. How far Mr. Campbell's ideas of what is a decent structure are consistent with giving adequate differentials to the more responsible railway employees is not known. A wage structure which is satisfactory to the wage earner must not be a prerequisite to co-operation in securing greater efficiency; greater efficiency must come first.

One argument put forward in favour of a subsidy is that, during and immediately after the last war, under Government control, the four main line railways succeeded in producing a surplus of £124,000,000 which, it is argued, should be refunded to the railways. This sum should not be used as a subsidy, which would have the undesirable effects to which we have referred above. There is, apart from any subsidy, the question of capital improvements. If the Commission were allowed to use its capital in effecting badly needed improvements, and, without crippling itself by unduly adding to its liabilities, to borrow further capital for such improvements, the result would be better service to railway users and an improved operating ratio. Such legitimate capital improvements have nothing in common with the subsidising of losses on year-by-year operation.

article of which the first instalment appears elsewhere in this issue, the progress of the whole project is traced through its different stages, which have already been recorded in detail in our pages as they have been completed.

The Sheffield-Manchester line, completed by Locke, rises from both cities to a summit level of 960 ft. in the Pennine moorlands where Yorkshire, Cheshire, and Derbyshire meet. West of the summit the watershed is pierced by what is now the third longest tunnel in the country, the Woodhead New Tunnel, opened earlier this year, and a feat of construction rivalling that of the old tunnels alongside, which it supersedes. The Wath-Penistone branch, traversed first by the westbound loaded mineral trains and part of the initial stage of the electrification scheme, has steeper gradients even than the main line, and up the worst of them trains were banked until electrification by the first British main-line Beyer-Garratt locomotive, now transferred to another sphere of usefulness.

The constant curvature, the often scant clearances, the need to provide against colliery subsidence, and the complexity of some of the yards and junctions imposed special problems on the designers and erectors of the overhead structures and equipment. By its nature the line, with its long continuous descents eastwards and westwards from the summit offers an excellent field for the introduction of regenerative braking with its economy in power consumption, and both the Co-Co and Bo+Bo locomotives are so equipped. Already the great benefits of electric traction are being felt in the greatly reduced timings of both freight and passenger trains and they will be realised to the full in the case of freight trains when the final extension to Rotherwood is completed.

Electrification through the Pennines

THE official inauguration last Tuesday of electric haulage throughout between Sheffield and Manchester marks the near-completion of the Manchester-Sheffield-Wath electrification scheme. Work now remains to be completed only on the three-mile section of line south of Sheffield Victoria as far as Rotherwood Sidings. From next Monday all passenger trains will be electrically worked, but goods trains from the south will continue to be steam-hauled to Penistone until the Rotherwood section is brought into service early next year. The Sheffield-Manchester main line is the first in this country on which electric traction is being used for all types of traffic; on the Southern Region electrified lines almost all goods trains are still hauled by steam locomotives.

This project, estimated to save annually 100,000 tons of locomotive coal consumed in working heavy mineral trains over the Pennines from the South Yorkshire coalfields to Lancashire, was planned before the war and set in motion by the late Sir Nigel Gresley; Mr. H. W. H. Richards, then Chief Electrical Engineer, L.N.E.R.; and Mr. H. H. Swift, the present Mechanical & Electrical Engineer of the Southern Region and at that time Assistant to Mr. Richards. It has been brought to completion by Mr. J. A. Broughall, Executive Officer (Electrical Engineering, New Works & Development), Electrical Engineering Department, British Transport Commission, and Mr. K. J. Cook, Mechanical & Electrical Engineer, Eastern and North Eastern Regions. The electrical engineering work has been carried out under the direction of Mr. S. B. Warder, Chief Officer for Electrical Engineering, B.T.C.

The war first delayed and then caused the suspension of the work. When the time came to review the project circumstances had changed and modifications were made. One of the most important decisions taken was to drive a new tunnel under the Pennines at Woodhead, as the state of the old twin tunnels had deteriorated so much as to necessitate either their complete reconstruction or abandonment in favour of a new bore. It was also decided to introduce a batch of Co-Co locomotives—27 at first, but afterwards reduced to seven—besides the 58 Bo+Bo units built or commissioned. On the other hand the scheme was cut to exclude the loop through Fallowfield to Manchester Central, and other economies were made. In an

Australian Railways

FROM small beginnings in the 1850s the railway network of Australia has grown to some 28,000 miles of line, predominantly State-owned and laid to gauges varying between 2 ft. 6 in. and 5 ft. 3 in. The history of Australian railway development cannot be considered apart from the gauge question. The reasons which determined the selection of the 5-ft. 3-in. gauge in Victoria and South Australia and the 4-ft. 8½-in. gauge in New South Wales are given in an article elsewhere in this issue, in which the course of this development is traced. The railways of Queensland, Western Australia and Tasmania are laid to the 3-ft. 6-in. gauge, which is also that of a considerable mileage of line in South Australia and the Northern Territory. The Commonwealth-owned Trans-Australian Railway linking South and Western Australia is 4-ft. 8½-in. gauge. Through transits between States thus require transhipment at the border, except those between Victoria and South Australia, all on the 5-ft. 3-in. gauge, and also New South Wales and Queensland by the Kyogle route to Brisbane, 4-ft. 8½-in. gauge throughout. A comprehensive scheme to remove this encumbrance to the free movement of goods and passengers throughout the Commonwealth was drawn up by the late Sir Harold Clapp, one of the most eminent of Australian railwaymen, in 1945. Its merits are recognised on all sides, but its proposals, which include the conversion to standard gauge of the broad-gauge lines, entail great expenditure, and a much less costly scheme recently brought out is commanding attention. Its principal aim is to convert some existing sections and build new links to the 4-ft. 8½-in. gauge.

British manufacturers have made a substantial contribution to the postwar modernisation schemes of the Australian railways by supplying large numbers of steam, diesel, and electric locomotives, diesel sets and railcars, and wagons. For instance to Victoria, where the first steam railway in Australia opened a century ago and, appropriately, the first main-line electrification in the continent was completed in its first stage earlier this year, large deliveries from the United Kingdom during the last few years have included the 70 4-6-4 locomotives built by the North British Locomotive Co. Ltd., 60 2-8-0s from the Vulcan Foundry Limited, and 25 2,400 h.p. main-line electric locomotives, supplied by the English Electric Co. Ltd. Deliveries to the other systems have been equally

important, and substantial new orders have lately been placed in this country, as for instance the £1,000,000 Metrovick contract announced in our Contracts & Tenders columns last week. Australian manufacturers can rightly expect to receive an increasing share of orders which the railways are unable to execute in their own workshops, but the demands for new material and equipment continue to be heavy and British industry can confidently expect its century-old connection with the Australian railways long to continue and flourish.

Winter Train Services, Western and Southern Regions

THE main feature of the Western Region winter timetables is the continuation throughout the year of certain summer long-distance trains which never previously have run in the winter. One of these is the 9.30 a.m. from Paddington to Plymouth, which replaces last winter's 11 a.m. from Paddington; this change will be valuable, as it provides for the first time in winter a fast morning service from London and Reading to Taunton (11.58 a.m.) and Exeter (12.40 p.m.), with greatly improved morning connections from Taunton and Exeter to stations in Cornwall. The 9.30 a.m. down is booked over the 106·7 miles from Reading to Taunton in 105 min. It is faster by 12 min. to Exeter than during the summer, but with an additional stop, at Totnes, reaches Plymouth at 2.20 p.m., as before.

Similarly in the up direction, last winter's 8 a.m. from Penzance to Paddington, due 4.20 p.m., is replaced by continuing the summer 7.30 a.m. service from Truro to Paddington, leaving Plymouth at 9.35 a.m., Exeter at 11.25 a.m. and Taunton at 12.6 p.m.; but this is slower than its down counterpart, as Reading will not be reached until 2.6 and Paddington until 2.50 p.m. As to other changes in Cornwall, certain local trains west of Plymouth are withdrawn, and additional stops are made by through trains in compensation, with corresponding deceleration.

Another service never previously operated during the winter months is the "Cambrian Coast Express"; this continues to run, with restaurant car throughout, between Paddington and Aberystwyth, and with through coaches to and from Barmouth and Pwllheli. Leaving London at 10.10 a.m., it gives an additional 2-hr. service between Paddington and Birmingham; in the reverse direction, at 11.15 a.m. from Aberystwyth, it forms the 4 p.m. 2-hr. train from Birmingham to Paddington, calling at Leamington. First and third class sleeping car accommodation—another innovation—is provided on the 12.5 a.m. from Paddington to Birkenhead, arriving at 7.45 a.m., and returns on the 7.15 p.m. from Birkenhead (10.15 p.m. from Shrewsbury), arriving at Paddington at 5.10 a.m.

There is a complete reorganisation, somewhat on the lines of that already achieved successfully in the Cardiff area, of the local passenger services in the Birmingham and Wolverhampton area. Between Birmingham and Knowle, for instance, a half-hourly service is provided through the day, at 20 min. past the hr. from Moor Street, and 50 min. past from Snow Hill, with certain trains extended to Leamington Spa; from Snow Hill to Wolverhampton there are trains at 30 min. past the hr., while the Snow Hill-Stourbridge Junction line is served by trains at 45 min. past the hr. from Snow Hill. Additional trains run during the rush hours on all these services, and additional facilities are provided by main-line trains passing through the area. Over 3,000 additional train-miles will be run, but there will be much better user of rolling stock and staff during slack periods.

On the South Wales main line a pair of express trains which had no prewar existence in winter is the "Pembroke Coast Express," at 10.55 a.m. from Paddington to Pembroke Dock and the corresponding up working; these trains ran throughout last winter, and continue to do so this winter. On this line there are even-hour departures for all the up expresses from Cardiff to Paddington; these will now be the 8 a.m., 10 a.m. ("Red Dragon"), 12 noon

(last winter 12.20 p.m., which calls additionally at Reading and reaches London at 3.10 instead of 3.30 p.m.), 3 p.m., 4 p.m., 5 p.m. ("Pembroke Coast Express"), and 7 p.m. (previously 6.47 p.m.). The 1.55 p.m. from Paddington is accelerated 19 min. to Newport, 16 min. to Cardiff, and 12 min. to Swansea. Systematic departures for London at the even hour have also been arranged from Worcester, at 9 a.m. (previously 8.55), 12 noon (previously 12.15), 2 p.m. (previously 2.10), and 4 p.m. (previously 3.55), but, as with the up South Wales expresses, without any acceleration, save for an odd minute or two.

On the Bristol main line, all the substantial accelerations in the summer timetable (including the 1½ hr. "Bristolian" each way between Paddington and Bristol) remain in force, except that of the up "Merchant Venturer" (5.27 p.m., previously 5.25, from Bristol), which is slowed by 27 min. with only one additional stop (Swindon), and reaches London at 8 p.m. instead of 7.31. The 7.45 a.m. from Bristol, however, is accelerated to reach Paddington at 10 a.m., covering the 94 miles from Chippenham in 92 min.

The only change of note in the Southern Region winter timetables is the introduction of a new business train at 8.5 a.m. from Tunbridge Wells to Charing Cross (arrive 9.7 a.m.), to relieve the existing 7.27 a.m. from Hastings to Cannon Street. This will have a connection from Dover Priory at 6.56 a.m., Folkestone Central at 7.14 a.m., and Ashford at 7.37 a.m., from which London passengers will require to change at Tonbridge. Otherwise, apart from one or two minor alterations, the Southern Region winter service is identical with that of last winter.

Coal Economy on Japanese Railways

IN 1951, coal prices in Japan reached such a high figure that the cost of coal required by the National Railways, which constitutes some seven per cent of the national coal consumption, could only be met with difficulty within the budget allotment. The position was aggravated by a nation-wide coal strike in 1952. With the object of economising in coal consumption, the railway administration conducted a series of tests with a "D51" class 2-8-2 heavy freight locomotive using a mixed fuel of coal and a grade "B" oil of 10,400 cal./lit. The locomotive has a grate area of 35·2 sq. ft., and a total heating surface of 2,384 sq. ft.

During the experimental stage the locomotives were equipped with an oil tank of 170 gal. capacity, fitted on top of the boiler. The oil was preheated by means of a steam pipe to a temperature of 150 deg. F. The oil supply was led into the cab, and ejected into the firebox immediately above the firehole door. Oil consumption varied between 0·88 to 2·2 gal. a min., depending on the load hauled by the locomotive. Increased efficiency is claimed as a result, and during a special performance test in 1953, the increase was considered to be some 10 per cent. This method of firing is gradually being extended to other locomotives. In 1951, 61 freight locomotives of the "D51" class were fitted, and at the end of 1953, 248 had been so fitted, and an oil fuel tank of 528 gal. capacity is fitted in the tender.

The Japanese National Railways use a domestic bituminous coal having a calorific value of 6,000 cal./kg., its use being confined to the less heavily graded sections of the line. A pitch-bound briquette of 6,600 cal./kg. is used with the oil spray, which is said to be very effective because the briquette burns slower, and the firebed is comparatively thin. On the heavier freight trains two firemen are employed, and the oil/coal system of firing has enabled the railway to dispense with the second fireman. Oil consumption during 1953 was 7,200,000 gal. and the railway estimates that the saving in coal amounted to some 40,000 tons. The National Railways have 5,035 steam locomotives in service, constituting 91·7 of the total locomotive stock, the remainder being electric. A long-term policy of dieselising certain main-line services is under consideration, and also the use of diesel railcars. With this object in view the ground oil fuel installations have been sited suitably to offset capital expenditure when the dieselisation programme is put in hand.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Communication Between Driver and Guard

September 10

SIR.—The suggestion made by Mr. M. D. Morgan in his letter in your September 10 issue, that a klaxon horn be used for communication between guard and driver in a train not fitted with continuous brakes, is hardly practical: such a horn might not be audible, or distinguishable from other noises.

All goods trains should be fitted with continuous brakes. Admittedly freight trains in the U.S.A. are longer and heavier than in Britain, but there is much to be said for telephone or wireless communication between the cab and the brake van, as on American railways.

Yours faithfully,
COURTENAY BARRY

The Old Manor, Salisbury

A Subsidy for the Railways

September 8

SIR.—It is surprising that you should regard a subsidy for the railways as "objectionable on any grounds." Responsible contributors to the national press have advanced strong arguments for a subsidy which cannot be dismissed so summarily. But the extraordinary allegation that a subsidy would remove one of the chief incentives to efficiency will astound railwaymen on whose co-operation efficiency ultimately depends.

Real efficiency can never be obtained merely by planning, re-equipment and modernisation, necessary and commendable as they undoubtedly are. A first essential is an incentive which will keep alive the railwayman's pride of craft. He now feels that he is working for an industry so bound by financial shackles that a fair wage, which carries with it a status equal to that of workers in other industries, is a forlorn hope. "The labourer is worthy of his hire."

You would probably agree that the railways are more efficient than they were under private ownership. There is, of course, vast scope for improvement. To obtain the essential co-operation of the men on the job, there are, I suggest, two obvious prerequisites:

1. A fair wage. It is unrealistic to expect enthusiastic co-operation from a poorly-paid staff. It is putting the cart before the horse to tell them that there is no money in the kitty and that their only hope of better wages lies in participating in schemes which, as they see it, are designed primarily to make them redundant.

2. Confidence must be restored. Railwaymen must know where they are going; they need a blue print for the future. What will modernisation, re-equipment, electrification, dieselisation, etc., mean to them? It is regrettable, but very natural, that productivity commissions should be regarded as "razor gangs." Railwaymen have long memories.

It is doubtful whether it is generally realised what untold harm was done by those who ruthlessly denationalised road haulage and, incidentally, robbed the kitty of £8,000,000 a year. Can any railwayman be expected to believe that the slightest consideration was given to transport efficiency? It will need something more than a distinctive Regional uniform to make railwaymen believe in the sincerity of those responsible for such blatant political expediency when they prattle so glibly about greater efficiency.

Enormous difficulties confront anyone genuinely anxious to increase efficiency on the railways. No one realises that more than the railway trade union leaders. The General Secretary of the N.U.R. has made it quite clear where he stands. Throughout the prolonged negotiations on a new wage structure, Mr. J. Campbell has repeated: "Give me a decent wage structure and I will use all my

influence to secure the co-operation of railwaymen for greater efficiency." That is a formidable task in any event but without a decent wage structure it is well nigh impossible.

Why, then, this horror at the idea of a subsidy? After all, the railways did put £124,000,000 into Government coffers in 1940-47. Would a subsidy, which could provide the railways with the means to modernise and the workers with a fair wage, not represent an excellent investment for the country?

Or perhaps you can suggest another way?

Yours faithfully,
C. R. SWEETINGHAM
Press Officer

The National Union of Railwaymen,
Unity House, Euston Road, N.W.1

Punctuality

September 10

SIR.—It may be hoped that the "Elizabethan" on its 6½-hr. schedule had a good season and that I was unlucky, but on my annual trip to and from Edinburgh we were never on the right side of time at any scheduled point. Three causes contributed to the loss of time: (1) poorish locomotive performance; (2) permanent way slacks; and (3) signal checks. The first two may possibly be excused, but not the third.

Going down we had signal checks at Peterborough, Retford, and York. The return journey was even worse. We had a signal stop outside Ferryhill; slight signals near Riccall; signal stop after Balne (3½ min.); signal stops between Bawtry and Ranskill and another signal stop between Retford and Carlton. We finally reached Kings Cross 32½ min. late.

Cannot controls do something to lessen these signal checks which seem to be experienced so frequently on the Eastern Region main line?

Yours faithfully,
R. S. HAINES

The Parsonage, Curridge, Newbury

New Underground Railways in London

September 10

SIR.—Londoners are promised, at the cost of many millions of pounds, a new tube from Walthamstow to Victoria. No doubt millions of the travelling public would benefit by such a line, yet many more would benefit for a fraction of the cost if some dead-end Underground lines were linked with the main-line railways and extensions made over existing surface tracks as has been done to Epping and High Barnet.

Thus the Holborn-Aldwych line should extend north to Kings Cross and south to Elephant & Castle via Waterloo; and the Northern City line similarly to Finsbury Park and to the Elephant; whilst the Bakerloo should be diverted at Waterloo to run underground to near Deptford to join the Southern Region tracks. In the first three cases there would be additional stations in Central London.

These four schemes would require construction of about 10 route-miles of tube, very little more than the proposed Walthamstow-Victoria line. The rest of the work would consist mainly of adapting existing surface lines to take the "Underground" services.

Yours faithfully
D. W. MOUNTAIN

Prescelly, Harbury Road, Carshalton

[Various schemes have been considered for linking further London Transport Underground with British Railways suburban lines. The new line, Route "C," to which our correspondent refers, was approved as being the most urgently needed.—ED., R.G.J.]

THE SCRAP HEAP

Station Arms Dump

Two automatic pistols, of German manufacture, were found wrapped in paper in a litter bin on a platform at Green Park Station on the Piccadilly Line of London Transport, and handed to the police. They were both in good condition. No ammunition was found with them.

In the Pink

A correspondent of *The Railway Observer* states that "Jubilee" class locomotive No. 45659, painted overall in pink primer, without numerals on the cab sheets or emblems on the tender, worked the 2 p.m. Birmingham to Liverpool (usually an Edge Hill turn), on July 14, a probable explanation being that Crewe Works had closed for their annual holidays, and the engine had been pressed into service to help out with the holiday traffic. He continues:

I swear I hadn't had a drink,
That "Jubilee" was painted pink!
Across three fields, over a stile,
I bet I nearly ran a mile,
All this endured a peep to take,
All this to find the name was Drake.

Old Timers

In one of the old lifts, now being reconditioned, at Hampstead tube station may be seen a poster over 50 years old. It announces the appearance of Seymour Hicks and Ellaline Terriss in "Bluebell in Fairyland" at the Alhambra, Leicester Square. Miss Terriss played the name part in this production in December, 1901. . . . London Transport say the poster must

have survived as a backing for its innumerable successors.—"Peterborough" in "The Daily Telegraph."

[The Hampstead section of the London Electric Railway, now part of the Northern Line of London Transport, was opened from the Strand to Golders Green and Highgate in 1907—ED., R.G.]

Qualified Success

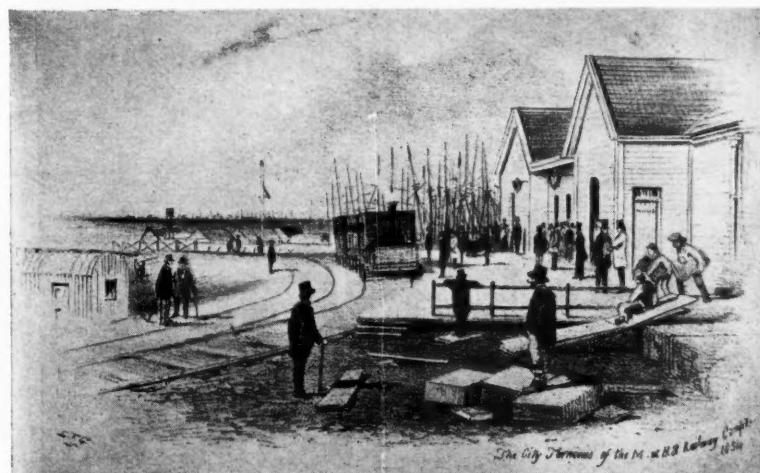
Upon making inquiries, it has been ascertained that the medico-chirurgical sounding abbreviations shown in the



Unusual method of showing a driver's qualifications

accompanying illustration are not quite what they might appear to be. Mr. Rajput is a Driver in the Locomotive Mechanical Department and prides himself on having obtained his Madras School Leaving Certificate.—*From the "East African Railways & Harbours Magazine."*

The First Steam Railway in Australia



Contemporary drawing by S. T. Gill of the original city terminus of the Melbourne & Hobsons Bay Railway in 1854. The engine is believed to be a 2-2-2 tank built by Robertson Martin & Smith, with boiler by Langlands Foundry, Melbourne, which worked the passenger service until the arrival in 1855 of locomotives from Britain

Railway History Lesson

One rarely comes across such an accumulation of evidence about the component companies as was noticed on a recent journey from Leeds to Kings Cross. Among the tableware in the restaurant car was a teapot bearing the crest of the Great Northern Railway, a milk jug from the Great Eastern, forks from the Great Central and the London & North Eastern, Hotels Executive spoons, and knives of British Railways, Eastern Region. The bill brought by the attendant was headed "British Transport Commission (Catering Services)" and had 1954 prices.—*From "The Manchester Guardian."*

To Waterloo Station

(from an old flame)

I met you when the century and I
Were scarce aware of first youth fleeting
by

And you were old, by man's dull
reckoning,

When I first saw ambition beckoning;
And, now, the weight of years descends
on me,

But you have younger grown; what
witchery

Revealed to you the old Pierian Spring,
There to renew your youth by
borrowing

From time's exchequer? Would I had
the guile

To make the tyrant hold his hand the
while!

Fine craftsmanship conceived you,
Waterloo,

And built the bones of beauty into you;
Experience gave you poise and dignity
And cloaked you in a calm serenity,
Concealing 'neath unstudied elegance
The steely temper of resilience.

When Tennyson's prophetic words came
true

And the torn skies discharged their
deadly dew,
Bruised, but unbowed, amid the flame
and smoke,

You scorned the flailings of the
Herrenvolk.

Proud paragon of versatility,
Quintessence of adaptability,
What other comparable rendezvous
Could bear such burdens? Who so
swift as you

To shed your travel stains and, with
such grace,
Greet each new day with such a smiling
face?

Marvelling afresh at your unwrinkled
youth,

As taut and indestructible as truth,
I need not pray that memory should be
kind

And so preserve your beauty in my
mind,

For you have left your moulder's mark
on me

And left me more in love, if that could
be.

A. B.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Works at Woltemade

Work has begun on a new flyover project at Woltemade, between Cape Town and Bellville. As a first step the existing lines are being deviated to permit the necessary groundwork for the bridge to be undertaken. The bridge, to be built at an estimated cost of £160,000, will ease congestion at Woltemade and is part of an improvements scheme for this station to cost some £366,000, including the provision of a new ten-track marshalling yard.

The difficulty experienced at this point is caused by the fact that Bellville marshalling yard is situated on one side of the main line to Cape Town with the Cape Town docks and new goods yard on the opposite side. As their layout does not permit a direct connection with the main line, used by suburban passenger trains, a relief main line had to be built between the latter points and Woltemade. This arrangement has necessitated southbound goods traffic having to cross the line used by northbound suburban services with resultant delays and congestion during peak periods, hence, the need

for the flyover by means of which the main-line track will pass above the relief line.

The new yard at Woltemade will handle goods for the Epping industrial sites and the Simonstown line and will expedite conveyance of consignments between Cape Town and these points considerably by allowing them to be handled at Woltemade instead of being taken to Bellville.

INDIA

New Line Opened in Bihar

The Minister of Railways, Mr. Lal Bahadur Shastri, opening the 14-mile metre-gauge Murliganj-Dauram-Madhipura line in Bihar last month, said that the requirements of the northern parts of the State in the matter of railway communications were receiving high priority.

Built at an estimated cost of Rs. 3·2 million, the new line closes the gap between Dauram and Madhipura, on the Saharsa - Dauram - Madhipura section, and Murliganj, on the Purnea-Katihar section of the North-Eastern Railway.

As a result of the westward swing of the River Kosi, the towns in this area

are cut off from the outside world whenever the river is in flood. To obviate the hardship caused to the people, it was decided to connect Dauram and Madhipura with Murliganj. The line was completed in about two years.

New Stations in Madras Suburbs

A new halt, Tambaram Sanatorium, on the Tambaram-Madras Beach electrified metre-gauge section of the Southern (formerly South Indian) Railway, midway between Tambaram and Chromepet, was opened recently by Shri V. V. Giri, Union Labour Minister. The halt is provided mainly for the convenience of patients and visitors to the sanatorium.

The provision of a station between Chetpat and Kodambakkam, on the same line, has been sanctioned.

VICTORIA

Centenary Exhibition

To celebrate the centenary of steam railways in Australia, exhibitions have been staged by the Victorian Railways at Spencer Street Station and in Melbourne Town Hall. The Spencer Street

Diesel Passenger Working in Tasmania



Passenger train on the 3-ft. 6-in. gauge Tasmanian Government Railways, hauled by English Electric 660-h.p. Bo-Bo diesel-electric locomotive

exhibit comprised a representative collection of old and new locomotives, rail motors, and passenger stock. The oldest individual exhibit was an 0-6-0 type locomotive, built in 1884 by the Phoenix Foundry Co. Ltd., Ballarat. Before its withdrawal it had run 1,009,798 miles.

On show in the modern transport section were a "B" class Clyde diesel-electric locomotive and an English Electric-built "L" class electric locomotive. Among the passenger stock shown was No. 5 State Car, used by Queen Elizabeth and the Duke of Edinburgh on their Australian tour, an "Overland" sleeping car used on the Melbourne-Adelaide express and, as a comparison, four- and six-wheel coaches built in the 1880s.

The main attraction of the Town Hall exhibition was a model railway system covering 1,400 sq. ft., on which ran electrically-operated scale models of trains of all periods, with a landscape representing a typical section of the Australian countryside. Other exhibits included models of the proposed Melbourne underground loop railway, and of electrification and future engineering projects. An illuminated board showed the growth of railways in Victoria from 1854 to the present.

CANADA

Proposed New Line in Quebec

United States financial interests have approached the Quebec Government with a plan to build a railway from James Bay in the unexplored north-western part of the Province to Mont Laurier, about 120 miles north of Montreal. The area is known to be rich in mineral, forestry and hydroelectric resources.

UNITED STATES

New Haven Talgo Train Test

One of the inducements held out by Mr. Patrick McGinnis before he gained the presidency of the New York, New Haven & Hartford Railroad in April last was a high speed service in 2½ hr. between stations on the outskirts of New York and Boston, a little over 200 miles apart, in 2½ hr., with lightweight trains of the Talgo type.

In pursuance of this aim, a test was made on June 29 with Talgo units, when the 156·8 miles between New Haven and Boston South Station were covered in 2½ hr., with four intermediate stops, but this time was only 8 min. faster than that of the existing "Yankee Clipper" and "Merchants Limited" expresses. On the test run, by special Interstate Commerce Committee sanction, speeds up to 100 m.p.h. were attained at certain selected points. A general average speed of 85 m.p.h. would be needed to maintain the proposed schedules, and this would make new signalling necessary.

The aim of Mr. McGinnis is to buy at least 20 complete trains, and possibly

30, and, moreover, to combine with other railways, if practicable, to place orders of such size that mass production would be possible. In this way the price of the new stock might be brought down from anything between \$800 and \$1,300 per seat to, perhaps, \$500 per seat, which would make the acquisition of the trains, in his judgment, a profitable investment.

Chesapeake & Ohio at Detroit

Application has been made by the Chesapeake & Ohio Railway to the Interstate Commerce Commission for authority to acquire running powers over New York Central tracks through the tunnel under the Detroit River into Pelton, Ontario, to eliminate the present use of the C. & O. car ferries across the river. It is claimed that such use would cut the present average 4½ hr. transit time between Delray junction at Detroit and Pelton by more than half.

The terms proposed for the use of five miles of line, which include some 1½ miles in tunnel, are \$5·75 a wagon, with a minimum of \$2,500,000 for each five-year period in a contract time of 21 years. The C. & O. is also seeking from the Canadian Government authority to use 5½ miles of Canadian Southern tracks from the Canadian exit from the tunnel to the nearest point on the Detroit River Railway, which is leased to the C. & O. The total distance from Delray to Pelton is just over 12 miles.

ARGENTINA

President Peron on Railway Finance

In a speech to the Economic Convention in Buenos Aires, President Peron concluded observations on the subject of the ever-growing deficit arising out of Government operation of the railways by saying "The day when the railways are completely up to date regarding rolling stock and material and produce at least as much as they consume, the State will have no further interest in administering them." On another occasion, when addressing the closing session of the railwaymen's Congress, he attributed part of the deficit to possible weaknesses of organisation.

Locally-Built Rolling Stock

Ferrodinie, a government undertaking under the auspices of the Ministry of Industry & Commerce, is building railway wagons at Avellaneda, Province of Buenos Aires. It is also turning out steelwork for cranes, bridges, tanks and boilers. So far, its output has included: 140 tank wagons for petroleum and 40 for naphtha, each of 50 cu. m. capacity; and 200 75 cm. gauge wagons for coal traffic on the Eva Perón railway between Río Turbio and Río Gallegos. Seventy-five sleeping and dining cars have been modified and construction of 55-ton cereal wagons has begun. Work will shortly begin on 100 special wagons for sugar-cane traffic in the Province of Tucuman.

SWITZERLAND

New Lötschberg Motor Coaches

Two new motor coaches are now at work on the Bern-Lötschberg-Simplon line, built for the Bern-Neuenburg subsidiary, and they are to be the prototypes of future construction of such vehicles for all sections of the Lötschberg system. They are rated at 2,000 h.p. each, and are capable of hauling trailing loads up to 200 tons up the 1 in 37 gradients of the Lötschberg main line at 43½ m.p.h., or loads up to 295 tons over the Bern-Neuenburg section, which has gradients as steep as 1 in 56. The starting tractive effort is 28,700 lb., and the continuous tractive effort at 43½ m.p.h. is 18,080 lb. The cars are geared for a maximum speed of 68 m.p.h. All four axles are motor-driven.

Each car is entered from double folding doors at both ends, controlled from the driving cabs; these give entrance to spacious lobbies, one of which is enlarged to provide luggage space and standing space. There are seats for 64 third class passengers, including a pair of seats at each end in the popular position abreast of the driver's seat, giving unobstructed views fore and aft; there are also four folding seats. A lavatory is provided in the centre of the car. Each car is 73 ft. 5 in. long over body, and 77 ft. 9 in. over buffers, and weighs 67 tons.

AUSTRIA

Construction of Electric Locomotives

As during the next few years a large part of the lines of Southern Austria will be electrified, the Federal Railways have requested their contractors to accelerate the construction of the electric locomotives. So far, of 82 locomotives ordered, only 40 have been delivered. The remaining 42, in addition to the 12 baggage vans, will be delivered during the next two years.

FRANCE

Electrification in Upper Savoy

Another stage of the S.N.C.F. programme of electrification in Upper Savoy from Aix-les-Bains at 25,000 volts a.c., 50 cycles, has been completed with the introduction of electric traction between La Roche-sur-Foron and Annemasse, three miles from Geneva.

The voltage of the section from Aix-les-Bains to La Roche-sur-Foron, originally 20,000 volts, has now been raised to 25,000 volts, as approved for general adoption by the International Union of Railways.

It is expected that the electrification of the La Roche-sur-Foron—Bonneville section will be completed by March, 1955, and the Bonneville—St. Gervais-les-Bains-Le Fayet section in 1956. The line from Paris to St. Gervais and Chamonix will then be electrified throughout.

New Sleeping Cars for the Wagons-Lits Company

Twenty single-berth compartments in each car

MOST sleeping cars of the International Sleeping Car Company have 11 compartments, each with either accommodation for one person (first class), two persons (second class), or three persons (third class). The most popular is the second class accommodation, although most members of the public prefer not to share a compartment. In the U.S.A. the two-berth compartment, similar to the European type, has largely replaced the old-style dormitory car, but in recent years the roomette, a small compartment for one person only, has gained great favour.

The Cie. Internationale des Wagons-Lits set out to solve the problem of

with the floor of the corridor and two upper compartments with the floor 2 ft. 2 in. higher, which are reached by means of four steps. In the lower compartments the bed when in position for use leaves a space sufficient for the traveller to dress and undress.

Above this space the ceiling is somewhat higher than the rest of the compartment. In the day position the bed folds back against the partition and reveals a folding armchair which may be placed in any position in the compartment to suit the passenger's convenience. Ample room for baggage is available.

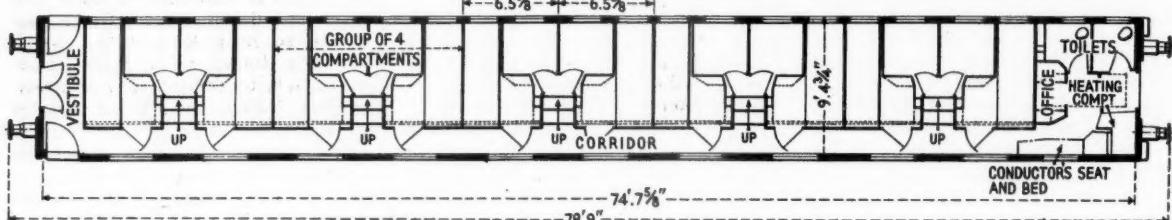
In the upper compartments the bed is fixed and is reached by two fixed steps,

bottle. The windows are double glazed and may be raised or lowered by hand.

At the end of the car there is a chair for the conductor, the seat of which can be folded back, or which can be extended to form a bed. The conductor's office contains an ice container, larder, cupboard for cutlery and crockery, coffee machine, and sink for washing up. One of the two lavatories contains a wash-basin and wardrobe. Lighting is by fluorescent tubes supplied by 72 V. d.c.

Construction of Coach

The body is built of stainless steel on the Budd principle. The need for robustness and rigidity has resulted in the



Layout of accommodation in 20-berth second class sleeping car

building a second class sleeping car to contain 20 single-berth compartments. The American roomette was not adopted as a solution; its compartment is narrow, and the bed when in position for use occupies almost all the floor space available. Such a defect would be still more apparent in a European roomette, by reason of the more restricted loading gauge.

The roomette, moreover, demands a centre corridor, no drawback in America, where windows are of the fixed type, but an inconvenience in Europe where it is the practice to use the windows for handing in or out small personal baggage, a manoeuvre which could not be carried out in the restricted space of a half compartment in a coach built with a central corridor.

Arrangement of Compartments

To provide compartments as large as possible within the loading gauge it was necessary to lengthen the body slightly and also widen and heighten it by dispensing with all exterior fittings such as roof ventilators; the diameter of the wheels has been reduced from 3 ft. 5 in. to 3 ft. 3 in. To make as much use as possible of the increased length the coaches have only one vestibule entrance, as in the special sleeping cars operating in the London-Paris "Night Ferry" service, and in all American sleeping cars. There is a side corridor serving five groups of four compartments, and at the opposite end of the coach to the vestibule there are two toilets.

Each group of four compartments is symmetrical in the vertical plane. It comprises two lower compartments level

one of which may serve as a small table. The armchair is fixed, but its seat may be tipped back to leave more room for the passenger when standing up. Ample space for baggage is available alongside the head of the bed. The two upper compartments are divided by a partition which may be folded back to form a large compartment for two persons.

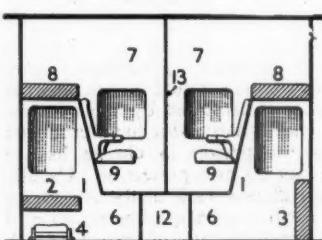
The beds are 2 ft. 7 in. wide and thus are particularly comfortable. They have the advantage of being able to be made in advance, before the passenger entrains. In the upper compartment he has merely to lift up the bed coverlet to get into bed. In the lower compartment he has merely to pull the bed out from the partition against which it rests.

In each compartment is a porcelain washbasin fed with cold or hot water and a plug for an electric razor. The compartments also contain the usual hooks and receptacles for tumbler and

choice for the interior partitions of plywood panels faced with metal on both sides. The visible portions of the panels are faced with a plastic material. Particular attention has also been paid to insulation.

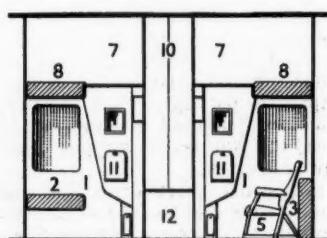
An air intake under the car distributes filtered air from the outside through a radiator. Each compartment is ventilated with air previously warmed to the ambient temperature; the passenger can divert air through a radiator element and thus make his compartment warmer than the rest of the car.

The first order for 25 coaches has been placed with the Ateliers Métallurgiques de Nivelles, Belgium, and a second order, also for 25 has gone to the Etablissements Carel Fouché et Cie. A third order is to be placed in Italy. It is hoped that some of the coaches, which have been styled type "P," will enter service this year.



CROSS SECTIONS OF INTERIOR

- | | |
|--------------------------------|--------------------------------|
| 1 Lower compartment | 5 Collapsible armchair, opened |
| 2 Bed in night position | 6 Luggage space |
| 3 Bed in day position | 7 Upper compartment |
| 4 Collapsible armchair, folded | 8 Bed |
| | 9 Armchair |
| | 10 Stair well |
| | 11 Washbasin |
| | 12 Linen chest |
| | 13 Folding partition |



Layout of upper and lower berth compartments

Special Signalling for Single-Line Tunnel

Automatic signals fitted with motor-driven time release relays for trolley protection

THE Missouri Pacific Railroad of the U.S.A. has three single track tunnels in the Ozark Mountains, equipped with an arrangement of automatic signals to prevent opposing trains from entering. Recently alterations have been made to the signalling installations to provide protection for railway staff using motor trolleys. On this line there are two passenger and four through freight trains daily and a few other trains which run at odd times during the week. Except for these tunnels, there is no automatic block signalling in this territory.

The accompanying diagram shows the signalling at one of these tunnels. Signals 3 and 4 at the entrances to the tunnel are two aspect signals which display either the red or green aspect. The normal aspect is green. The green control of Signal 4 extends right through

nected to the controls of the tunnel Signals 3 and 4. On the approach of a motor trolley, if the signal is showing green, the trolley is stopped and a push button on the post of the signal is operated. This changes the aspects of Signals 3 and 4 from green to red and an indication that the signals are showing red is given by a small lamp lighting up over the plunger. At the same time the time release relay is set into operation to run for eight minutes, this period being considered adequate to permit a trolley to run through the tunnel.

Automatic Flood Warning

In one of the tunnels, streams from springs flow in a ditch alongside the track and away through the south end of the tunnel. Sometimes this flow increases,

for single lines, to a position from which he can obtain a reasonable sighting distance of an approaching train but at the same time be in view of the trolley. The trolley and the flagmen proceed at a walking pace until the curve is passed. The flagmen are found from the trolleymen who push the trolley.

Push-Trolleys in Tunnels

In tunnels the working of push trolleys is difficult. On single-line railways, the rules generally insist on the official in charge being in possession of the token of the section. In a busy district this is restrictive to trains and trolleys and delays ensue. This is particularly so in a long section which includes a tunnel of medium length. Trains could be delayed for a considerable time taking into account that the

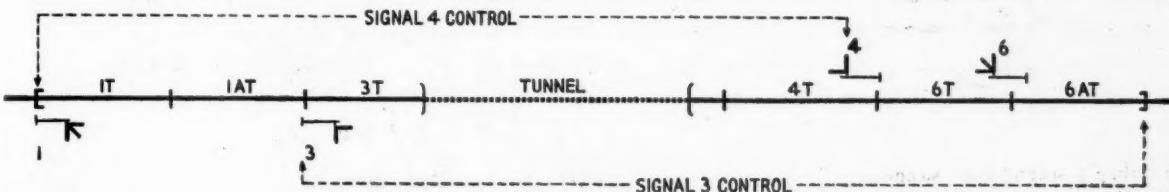


Diagram showing arrangement of automatic signals and extent of control and overlap of Signals 3 and 4 at the entrances of one of the tunnels

the tunnel to Signal 1. The green control of Signal 3 extends through the tunnel to Signal 4 and also includes the track circuit approaching Signal 6. When a train occupies the tracks controlling Signals 3 or 4, the aspects change from green to red. After the train has gone the signals again display the green aspect automatically.

Working Rules

The rules for working require a train halted at a red aspect of Signals 3 or 4 to stop and wait 10 minutes before proceeding into the tunnel at a speed not exceeding 15 m.p.h. The approach signals, 1 and 6, normally display the green aspect. For example, if Signal 4 is at red, Signal 6 will show yellow. If the track circuit between Signal 6 and Signal 4 is occupied, Signal 6 shows a lunar light. Signals 1 and 6 do not display the red aspect. The lunar aspect indicates "proceed at slow speed," a speed that will permit stopping short of any obstruction.

For many years drivers of motor trolleys have had to send a man ahead through the tunnels with a red flag and this has caused considerable delay. To render this procedure unnecessary, the signal department have altered the controls to include protection for motor trolleys as well.

Motor-driven time release relays set to operate in 8 minutes have been con-

raising the water level above the top of the rails. A high-water detector has been included as part of the signal system. It consists of a hollow metal float located in an open-bottom cover at the lower end of the detector. An operating rod extends from the float up through a 1 in. diameter pipe into the control box. A circular dish on top of this rod normally holds a mercury tube controller in position to close the contact. When rising water raises the float, the operating rod trips the contactor so that the contacts are open and they remain open until they are attended by the signal maintenance staff. Meanwhile the signals are held in their most restrictive aspect.

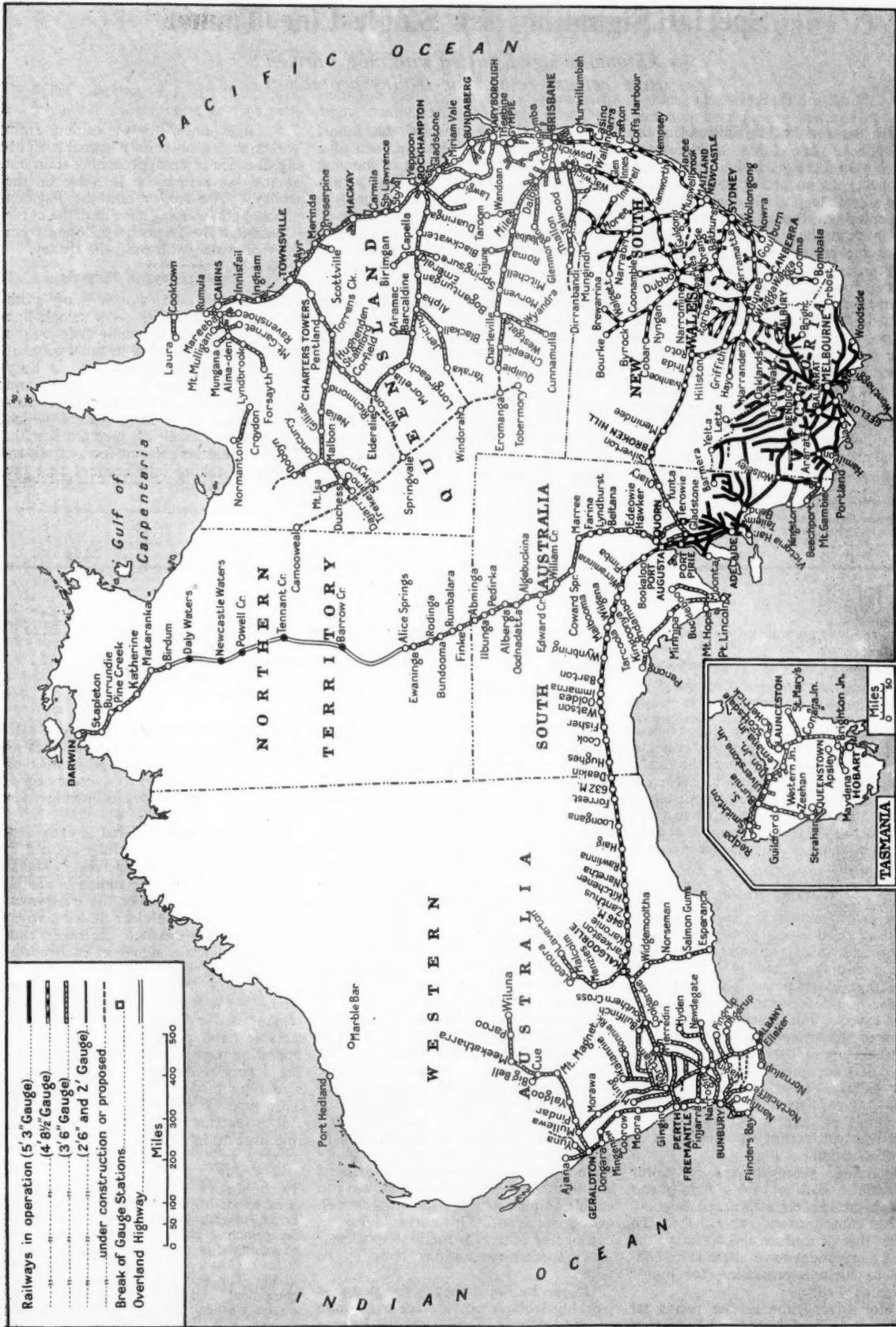
On railways signalled on the absolute block system, motor trolleys are worked as light engines. On a single line the driver has to be in possession of the token of the section and on double lines the trolley is protected by block instruments and signals; with hand-propelled trolleys the person in charge has to arrange for his own protection. Usually there is sufficient view of the line ahead and in the rear on single-line railways to enable ample warning of train approach to be received. On curves lying in cuttings or other obstructions to a clear view, special precautions have to be taken.

On the Indian Railways the rules for working trolleys provide for a flagman to be sent ahead, and also one in rear

average speed of a push trolley is 8-10 m.p.h. This applies to double lines as well, where a push trolley is signalled as a light engine, though to a lesser degree since delay occurs to a following train only.

Signalling similar to that already described could be very usefully applied in these cases. For double lines, a signal at the entrance to the tunnel could be set at danger by one of the trolleymen and replaced to the clear position when the trolley has reached the other end. For single lines a signal at each portal would be necessary and also a clearing arrangement. The most simple method would be to use two battery-operated semaphore or searchlight signals with suitable hand plungers or switches for operating them. Detection of approaching trains could be arranged at each signal by track circuit and indicators. This type of signalling would provide full protection to trolleys and would minimise train delays.

TRICO MOBILE UNIT AT EARLS COURT.—A mobile unit which has been displayed by Trico-Folberth Limited at motor shows in the principal cities on the continent will be exhibited at the Motor Show to be held at Earls Court, London, S.W.5, on October 20-30. The unit will feature various Trico equipment, including an automatic windscreen washer, flashing light signals, and so on.



The railways of Australia, showing gauges

The Railways of Australia, 1854-1954

A century of development under individual State and later also Commonwealth ownership



English Electric-built locomotive hauling train on Melbourne-Warragul electrified line, Victoria

THE first steam-worked railway in Australia was a 5-ft. 3-in. gauge line, two miles long, from Melbourne to Port Melbourne, opened on September 12, 1854, and owned by the Melbourne & Hobsons Bay Railway Company. It originated from the urgent need for better transport of supplies in consequence of the discovery of gold in Victoria in 1851 and the great number of emigrants and gold seekers who were attracted.

In New South Wales, the Sydney Tramroad & Railway Company had been authorised in 1849 as a standard (4 ft. 8½ in.) gauge line from Sydney to Parramatta and Liverpool. The terms of an act of 1852 authorising a change from 4 ft. 8½ in. to 5 ft. 3 in. (as in Ireland), which had been recommended by the company's first engineer, an Irishman, were communicated to the Governments of Victoria and South Australia; the latter colonies then stipulated this gauge in their own railway acts, hence its adoption for the Melbourne line.

Subsequently the Sydney Tramroad & Railway Company was empowered to revert to 4 ft. 8½ in., but both Victoria and South Australia by then had ordered locomotives and rolling stock for the 5-ft. 3-in. gauge. The third engineer to be appointed to the Sydney Railway saw the futility of different gauges in Australia and sought to have the new line to Parramatta built after all to the broader gauge, but unsuccessfully, and 4 ft. 8½ in. was adopted as the gauge of New South Wales. Thus arose the gauge question which has since profoundly affected railway development in Australia, where uniformity of gauge is at the present time a goal still far from attainment. While New South Wales went ahead with

the standard gauge, Victoria and South Australia were committed to the broad gauge. In Queensland, Western Australia, and Tasmania railway development came later, by which time the 3-ft. 6-in. gauge had gained favour on grounds of economy in construction for use in more sparsely populated countries with difficult terrain. It was adopted generally in those three colonies, though the first line in Tasmania, opened in 1871, was originally laid to the 5-ft. 3-in. gauge. Inter-colonial rail transport in Australia first

became possible in 1881 through completion of the Wodonga-Albury section of the Victorian Railways which allowed a through passenger service to be provided between Melbourne and Sydney, with change of train at Albury, the break-of-gauge point on the Victoria-New South Wales border. In 1887 Melbourne and Adelaide were linked by an all broad-gauge route of the Victorian and South Australian Railways.

In New South Wales, Victoria, South Australia, and Tasmania the Govern-



[J. L. Buckland]

Class "C38" 4-6-2 locomotive an air-conditioned "Riverina Daylight Express" entering The Rock Station, New South Wales Railways

ments at early stage took over the private railways; in Western Australia and Queensland almost all lines have been State-owned and built from the outset. The only considerable system still in private hands is the Midland Railway of Western Australia, a 277-mile line which is owned by a London company and is operated under a concession.

Commonwealth-Owned Lines

The policy of isolation long pursued by the States and the differences of gauge encouraged divergence of practice among the railways. Not until the creation of the Commonwealth in 1901 was railway development on an all-Australia-basis made possible. Among other things, it afforded the possibility of bridging the gap between the Western Australian Railways at Kalgoorlie and

but do not work, the five-mile 4-ft. 8½-in. gauge branch linking the Federal capital, Canberra, with the New South Wales Railways at Queanbeyan. Another important improvement in inter-State travel, this time brought about by the two States concerned, came in 1930, when a standard-gauge line was opened into Brisbane, enabling a through service to be introduced between Sydney and Brisbane.

In the report made by the late Sir Harold Clapp in 1945, the conversion to 4 ft. 8½ in. of the broad-gauge lines of Victoria and South Australia was the principal recommendation. The complete project, involving also new construction in Queensland and the Northern Territory, was estimated to cost some £76,750,000, a figure which would be more than doubled today. Recently a modified scheme has been

Australia. Container services between Sydney and Melbourne and Sydney and Adelaide obviate the transhipment of an increasing volume of goods at the break-of-gauge points.

Electrification

The Victorian Railways were first in the field with electrification. The conversion of the Melbourne suburban lines to 1,500 V. d.c. working was carried out in 1919-23, and 172 route-miles are now so worked. Electrification of the Sydney suburban system began in 1926 and now extends to 116 miles of line, which is also supplied at 1,500 V. d.c.

The first main-line electrification in Australia has been inaugurated this year with the opening of the first stage of the Gippsland line scheme in Victoria, a project including also doubling and re-



Two 1,105 h.p. Metrovick diesel-electric locomotives on special train from Perth to Kalgoorlie, Western Australia

the South Australian Railways at Port Augusta, by a 4-ft. 8½-in. gauge line across 1,000 miles of dry and almost uninhabited country, a task which could never have been attempted by the individual States. The construction of this, the Trans-Australian Railway, opened in 1917, was one of the great feats of railway engineering in the British Commonwealth, if not the world. The Trans-Australian has since been extended eastwards to Port Pirie, the meeting place of three gauges, and the journey time from the west to Adelaide thereby considerably lessened.

From Port Augusta, the original South Australian terminus of the Trans-Australian, the 3-ft. 6-in. gauge Central Australia Railway, also owned by the Commonwealth, runs northwards for 771 miles to Alice Springs in the heart of the Continent. A gap of some 600 miles separates Alice Springs from Birdum, the terminus of a third Commonwealth-owned line, the 316-mile line of the 3-ft. 6-in. North Australia Railway running inland from Port Darwin. The Commonwealth Railways also own,

put forward whereby, with the construction of certain 4-ft. 8½-in. gauge lines in Victoria (Wodonga-Melbourne, 191 miles), South Australia (Broken Hill-Port Pirie, 250 miles), and Western Australia (Kalgoorlie-Perth-Fremantle, 413 miles), and the conversion of the Port Pirie-Salisbury section of the S.A.R. (122 miles), with a 13-mile new line thence into Adelaide, all the capitals would be linked by the standard gauge. The cost is put at £30,000,000.

Break-of-Gauge Points

About 1,500,000 tons of freight are transferred annually at the break-of-gauge points, and the new scheme would make possible, for an expenditure much lower than that of the Clapp project, a substantial acceleration of inter-State passenger and freight services, with obvious benefits to the national economy. Meanwhile, the Commonwealth is building a new 4-ft. 8½-in. line on its own account to replace part of the 3-ft. 6-in. Central Australia line and facilitate the conveyance of coal from the Leigh Creek fields in South

alignment, which is being undertaken to improve the working of the heavy brown-coal traffic from the south-east of the State. In New South Wales the electrification of the Sydney-Lithgow main line is in progress. For these schemes British manufacturers are supplying motive power and various forms of equipment.

Schemes have been drawn up for electrifying the Brisbane and Adelaide suburban lines, but cost so far has precluded a start on the work.

After a rather slow start, diesel traction has made great strides on all systems whether in the form of locomotives, single railcars, or multiple-unit sets. The Trans-Australian Railway is now entirely diesel-worked, and its difficulty of locomotive water supply is now a thing of the past. The versatility of the diesel is well shown in the batch of 14 1,000-h.p. Sulzer-Birmingham diesels being supplied to the Commonwealth Railways. These, although intended for the 3-ft. 6-in. Central Australian Railway, are being delivered with two sets of standard-gauge bogies

to allow some of them to be transferred if required to the 4-ft. 8½-in. Trans-Australian line. The largest single order for diesel locomotives is that placed by the Western Australian Railways with the Metropolitan-Vickers Electrical Co. Ltd., for 48 1,100 b.h.p. units. Among other contracts, the Victorian Railways have received 26 1,500 h.p. diesel-electric locomotives from the Clyde Engineering Company of New South Wales, and the English Electric Co. Ltd. has supplied ten 1,700 h.p. locomotives to South Australia, ten of 1,600 h.p. to New South Wales, ten of 1,500 h.p. to Queensland, and 32 of 660 h.p. to Tasmania.

Steam Locomotives

The first Beyer-Garratt locomotives to be built made their appearance in Australia, in the form of two 0-4-0 + 0-4-0 compounds supplied in 1909 by Beyer, Peacock & Co. Ltd. for the 2-ft. gauge North-East Dundas line in Tasmania. It is fitting, therefore, that Australia should own the largest engines of this type which have yet been built, the new 4-8-4 + 4-8-4s of the New South Wales Government Railways. In the early years the Australian railways imported all their locomotives, almost wholly from the United Kingdom. Later, the systems began to build locomotives in their own shops, and still later, to place orders with Australian manufacturers. British builders have been supplying steam locomotives in large numbers since the war.

Victoria, with its large brown-coal resources, is paying much attention to using pulverised coal in locomotives, though it is perhaps early to say how the outcome of present experiments will determine the choice of future motive power in that State. In States which have to import coal the diesel locomotive and railcar will obviously play an increasingly important part.



Express hauled by class "520" 4-8-4 locomotive climbing through the Adelaide Hills, South Australia

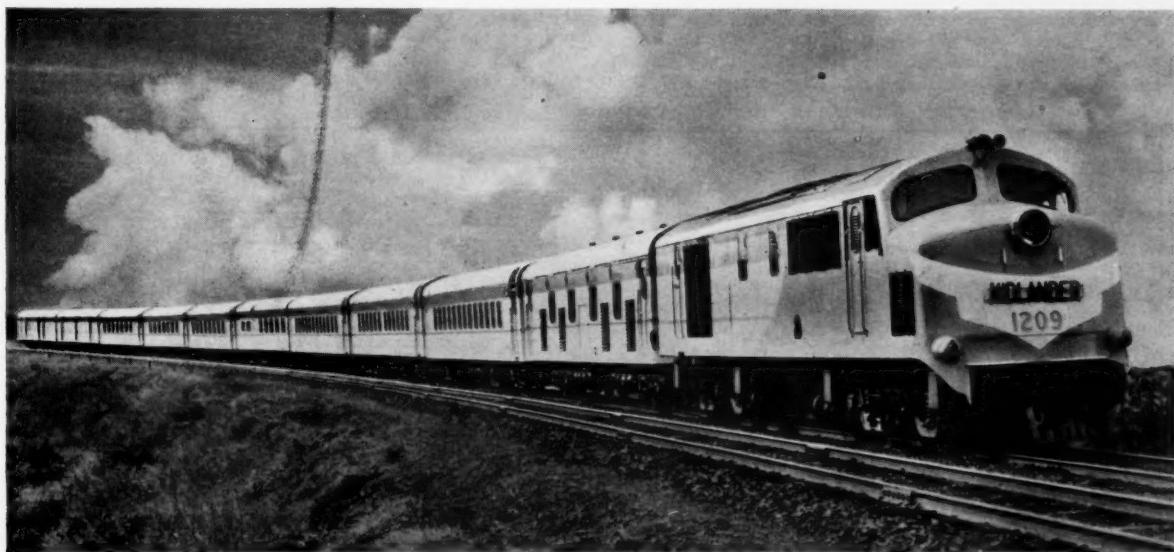
Passenger and goods stock long followed a British pattern, to which much of it still conforms. The increase of traffic and of the length of journeys as the systems expanded favoured the gradual emergence of a recognisably Australian type of passenger vehicle. In a continent of great climatic range it is not surprising that in recent years air-conditioning has proved its worth, and the newest main-line stock for long journeys is now air-conditioned.

Since the war the stock of many long-distance passenger services has been renewed. Examples are the "Overland" trains of the Victorian and South Australian Railways between Melbourne and Adelaide, and the Trans-Australian trains of the Commonwealth Railways between Kalgoorlie and Port Pirie. Progress in coach design has been as marked on the 3 ft. 6 in. gauge of Western Australia

and Queensland as on the wider gauges. Most of this new stock, whether for the broad, standard, or 3 ft. 6 in. gauge, has been built either by the railways themselves or by Australian builders.

Although, as in Britain, the four-wheel wagon remains the preponderant type, the railways are operating an increasing number of bogie vehicles, both open and closed. The Victorian Railways are building a batch of bogie goods vehicles designed to run at express speeds and thus effectively meet competition.

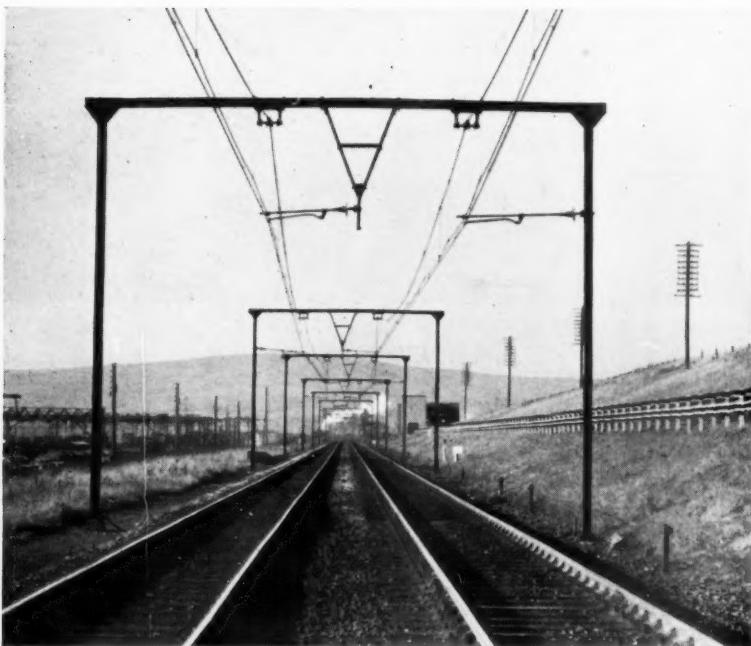
Britain has been well to the fore in catering for Australian wagon needs since the war, and large orders have been executed by such firms as the Metropolitan-Cammell Carriage & Wagon Co. Ltd., Birmingham Railway Carriage & Wagon Co. Ltd., Gloucester Railway Carriage & Wagon Co. Ltd., and the Pressed Steel Co. Ltd.



The new diesel-hauled "Midlander" of the Queensland Railways

Electric Working between Manchester and Sheffield—1

Completion of third stage of the Pennine main-line electrification project



Section of open line, showing overhead equipment above straight track

ALTHOUGH its main object was to expedite the movement of coal traffic, the electrification of the Manchester-Sheffield-Wath lines, which has now reached its third and penultimate stage, was designed to cater for both freight and passenger traffic operated by electric traction. The electrification of part of the former Southern Railway was primarily for passenger traffic, and only a few heavy goods trains are electrically hauled over it. That of the Newport-Shildon lines of the North Eastern Railway was entirely "for

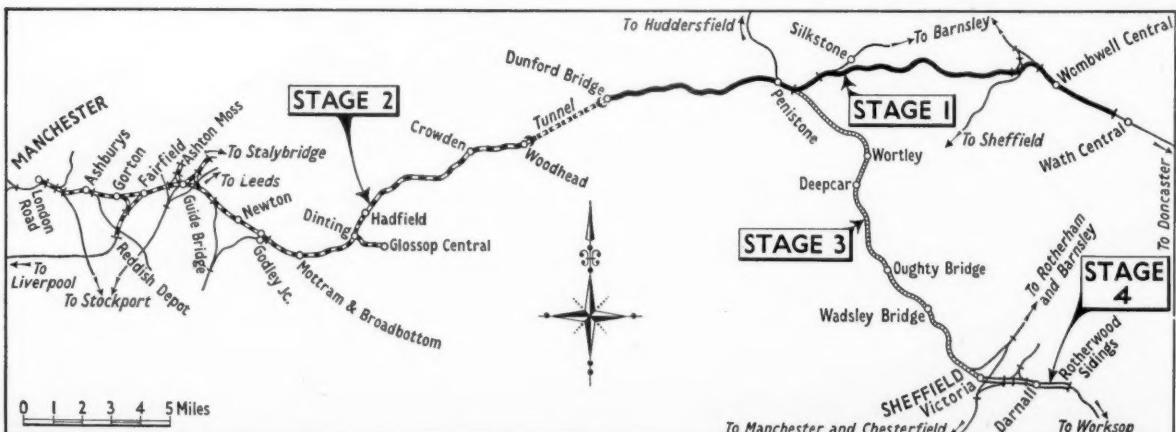
mineral traffic, and changed conditions caused the abandonment of electric haulage later.

By the end of the war of 1914-18, the merits of electric traction on main-line railways, carrying heavy traffic, had been proved in the Alps, in Lapland, and in the mountains of the western United States. The possibility of the electrification of the Great Central line over and through the Pennines was discussed in the latter years of the Great Central Railway, but no detailed scheme was examined until 1926, when

a report was made to the Chief General Manager of the London & North Eastern Railway on the conversion of 65½ route miles and 340½ track miles on the 1,500 V. d.c. system with overhead contact, recommended by successive committees set up by the Government. All haulage, ordinary goods, mineral and passenger, was to be by electric locomotives. In the report it was remarked that in addition to an annual saving in maintenance and running costs, amounting to £337,345, it would be possible to work trains through the Woodhead Tunnels on a five-minute headway, or less if signalling arrangements allowed, compared with the existing fifteen-minute intervals, and the traffic capacity of the Manchester-Sheffield line would be increased by 50 per cent.

Original Scheme Revived

This project was shelved, and not revived until 1936, when it was examined and alterations were made. These included the retention of steam locomotives for shunting, an eastern extension to a changeover point at Rotherwood (south of Sheffield), and one at the Manchester end to Ashton Moss for exchange with the former Lancashire & Yorkshire Railway. Other changeover points were to be at Wombwell Main Junction and Godley Junction. A steam and electric running shed at Darnall, an electric running shed at Wath, rearrangement at Gorton Works to handle electric locomotives, the use of multiple-unit passenger trains on the Manchester to Glossop and Hadfield suburban services, provision of forty-one 40-ton Westinghouse-fitted goods brake vans, and the repair of the twin Woodhead Tunnels were included in the new scheme. There were to be only 88 electric locomotives, including



Manchester-Sheffield-Wath electrification, of which only stage 4, from Sheffield to Rotherwood, remains to be completed

ten former North Eastern locomotives from the Newport-Shildon line to be used for banking. The gross cost was estimated at over £2,500,000, which by 1939 had been increased to £3,006,500; a return of 4·39 per cent was expected.

Progress Halted by War

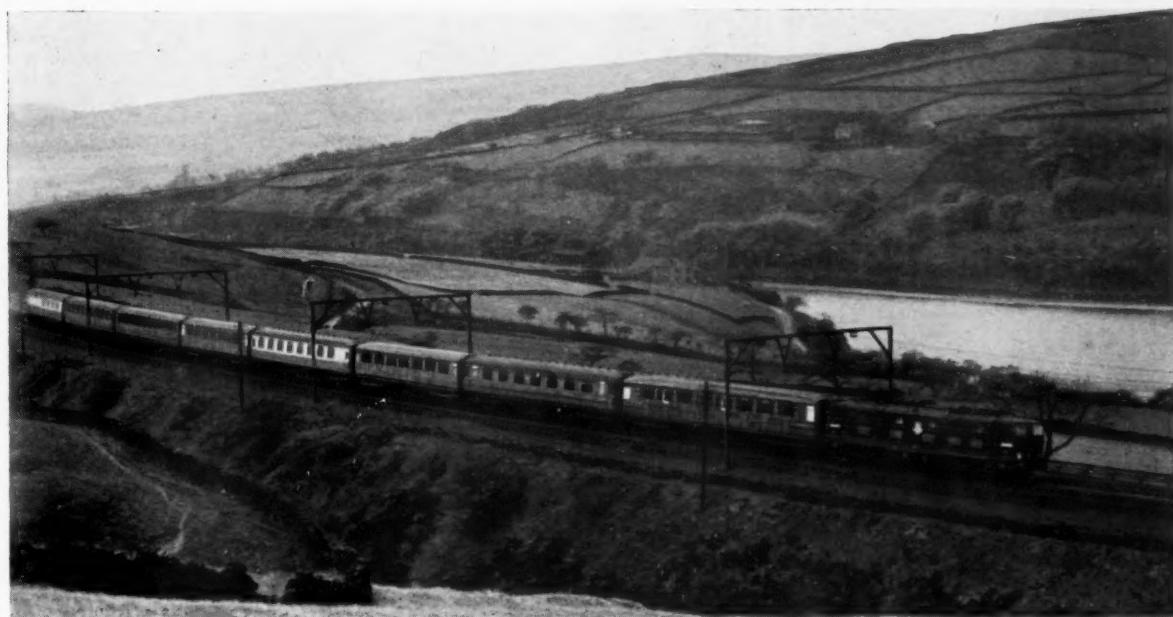
By 1939, erection of the overhead supporting structures was in progress, but war conditions caused the work to be suspended in the following year. One Bo + Bo mixed-traffic locomotive was built and ran trials on the Manchester South Junction & Altringham line in 1941. Further, the changeover sidings at Rotherwood, Sheffield, and the new steam motive power depot at Darnall were completed for war traffic.

A committee appointed in 1944 to review the programme recommended the continuance of the suspended

side. Train working contemplated before the war was based on lodging turns, with trains up to 1,100 tons having the proposed heavy special brake vans previous mentioned. The new plan was to work 750-ton trains, with single locomotives, between Rotherwood and Dunford Bridge, and 850-ton trains, banked in the rear from Wath to Dunford, also to have one general-service type of locomotive, some fitted with boilers for passenger train heating. The revised estimates amounted to £6,200,361. Resumption of the work was authorised in the second half of 1946, and a start was made on Thurgoland Tunnel in November. The one new locomotive was lent to the Netherlands Railways, thereby serving a double purpose. The L.N.E.R. would gain valuable advance experience of its behaviour in traffic;

drastic economies had to be made in advance. The number of Co-Co locomotives was cut to seven (instead of 27); the arrangements at Reddish were to be reduced, and the conversion of the line to Trafford Park and Manchester Central indefinitely postponed. By these and other economies, the estimated gross cost was brought down to £10,955,000.

While the replacement of the old Woodhead Tunnel was progressing, the first aim was the completion and inauguration of electric equipment and traction on the busy and severely-graded Wath-Penistone-Dunford section, 18 miles 45 chains in length from the changeover point west of Wath Central, to Dunford Bridge Station, just east of the tunnels. East of Penistone, where the main Sheffield-Manchester line is joined, the ruling gradient is 1 in



Test train near Hadfield

scheme, with modifications, namely, additional passenger-train engine-changing facilities at Sheffield Victoria, a re-examination of the proposed changeover points for freight trains, an investigation into the necessity for colour-light signalling, a main running and repair depot alternative to Gorton, the opening out of Thurgoland Tunnel, and an investigation into the proposed electric workings, under the altered conditions. The aim now was higher speeds with lighter trains, a reversal of prewar policy.

The alternative site for main running sheds in Manchester, with the suburban car sheds, was placed at Reddish on the branch from Fairfield Junction to Manchester Central. At Thurgoland, the rock formation proved difficult, and instead of opening out the tunnel, which had very restricted clearances, it was to be converted to single track and a new single-track tunnel built on the down

the Dutch, suffering from an acute shortage of motive power after the war, were glad to have it for its own sake.

New Tunnel at Woodhead

The century-old twin tunnels under the Pennines at Woodhead were in a bad state. Detailed inspection showed that major reconstruction would be essential within ten years. It was therefore decided to drive a new double-track tunnel through the mountain on the south side of the old ones, at an estimated cost of £2,800,000. This work, one of the most important civil engineering undertakings to be carried out this century, was completed this summer and our June 11 issue contained an account of the opening ceremony.

In 1948, a decision was made to include a Co-Co type locomotive class for passenger service. By 1950, the estimated gross cost of the electrification had risen to over £12,250,000, and

40, extending for more than two miles between Wentworth and West Silkstone Junction. Up this, for many years, trains were banked in the rear by the largest steam locomotive in Great Britain, the six-cylinder 2-8-0 + 0-8-2 Beyer-Garratt built for the former L.N.E.R. in 1925. At Wath concentration yard, the South Yorkshire coal trains were made up and worked over the Pennines to Mottram yard, where the wagons were remanaged for despatch to destinations in the northwest.

The scheduled time from Wath to Dunford Bridge was 142 min. for coal trains up to 1,100 tons, and 86 min. for express goods trains, not less than 50 per cent continuous-braked. Speed up the bank from Wentworth ranged from 7 to 15 m.p.h., and when the Beyer-Garratt engine was not available, four locomotives were needed, two hauling and two banking in the rear. Two electric locomotives, one at each end of

a 850-ton train, now maintain 11 to 12 m.p.h. up the bank and one electric locomotive hauling an express freight train of 425 tons maintains 22 to 24 m.p.h.

Power supply for the first section was taken from the British Electricity Authority, Yorkshire Electricity Board substation at Aldam, and distributed by cables, interconnecting the railway substations at Aldam, Stafford Crossing, Barnsley Junction and Dunford, at 33 kV. Mercury-arc rectifiers are used for the conversion of the a.c. power supply to 1,500 V. d.c. for the overhead con-

were installed at Elsecar, West Silkstone (between the Silkstone tunnels and Barnsley Junction), and at Bullhouse (west of Penistone).

Provision Against Subsidence

Special precautions had to be taken to support cables between West Silkstone Junction and Wath, because of colliery subsidence in this area. For the same reason, structures carrying the overhead equipment were made adjustable, with special foundations. Throughout, simple steel portals were used to support the compound catenary over-



Penistone Control Room: S.T. & C. desk and G.E.C. fluorescent lighting

tact lines. Barnsley Junction is equipped with three 12-anode steel cylinder rectifiers rated at 2,500 kW. each, capable of an overload of up to 10,000 kW. each, and the other three substations have two rectifiers each. The total installed capacity of this section is 22,500 kW. The supply to the overhead line is controlled by high-speed circuit breakers, installed at substations and track-sectioning cabins, and these also protect the equipment by clearing faults. At the Stafford Crossing and Barnsley Junction substations are installed electronically-controlled resistance banks each capable of absorbing 900 kW. from regenerative braking on locomotives. Substations were linked by 33-kV. cables of the three-core H.S.L. type and pilot cables of the seven- and four-star quad type. The electric control station was placed at Penistone and track-sectioning cabins

head lines where there were not more than four tracks; for more than this number of tracks, lattice-type overhead structures were used except in areas subject to subsidence, where cross-track catenaries were used. On some wide sections, the overhead structures were cantilevered out from supports on each side of the central pair of tracks. Numerous special types of overhead structures were needed for the complex layouts at junctions and in yards, their diversity shown by the fact that in the 3,460 structures required for the whole electrification there were some 500 different designs.

Conversion of this section was the first stage in the electrification programme and electric haulage of the coal trains from Wath to Dunford Bridge with the Bo + Bo locomotives, began on February 4, 1952. The running shed for all motive power on this initial

stretch was at Wath, and the changeover points were at Wath and Dunford Bridge. Traffic continued for the time being with steam traction through the old twin tunnels to Woodhead and thence to Manchester.

The second stage comprised the new tunnel and the line thence to Manchester London Road with the branches mentioned, and the running shed and repair shops at Reddish. Substations were placed at Woodhead, Hadfield, Newton, and Gorton, with main supply from the North Western Electricity Board at Gorton. The western section of the main line is severely graded, and rises almost continuously, from Manchester London Road to Woodhead. Apart from the crossing of the valley at Dinting, and two short stretches at Guide Bridge, there is not a level section in the 19 miles. From the Dinting level to Woodhead, just over seven miles, the first two miles through Hadfield rise at 1 in 100 and the rest is at 1 in 117. West of Dinting there is a short stretch at 1 in 77 and a longer one at 1 in 97, about a mile altogether. The ruling gradient is 1 in 100 between Gorton and Fairfield. Nearly 90 per cent of the road is on curves.

Special Overhead Equipment

Overhead equipment was the same as elsewhere, except through the new Woodhead tunnel, where the double catenary contact line was suspended from steel booms mounted on brackets recessed in the upper curves of the tunnel walls, at intervals of 146 ft. The contact wire is of 0.3 sq. in. cadmium copper, supported by a 0.321 sq. in. hard drawn copper catenary and a 0.191 hard drawn copper auxiliary catenary. Bracketed to the wall on the up side is a 33-kV. three-core 0.1 sq. in. H.S.L. type transmission cable linking the substations in Lancashire and Yorkshire, with the substation supervisory control cable, and a twin lead cable with telephone plug points at eight places for portable instruments, for electrical equipment maintenance.

By June last, all works were completed on the western section, in readiness for electric operation with the beginning of the summer service on June 14. During the summer months, pending completion of the eastern section from Sheffield, the steam-electric changeover has been made at Penistone for Sheffield-Manchester trains.

Apart from the Sheffield level, just under a mile long, the rise thence to Penistone is continuous throughout its 12 miles—four miles at 1 in 132 to Oughty Bridge, followed by about five miles at 1 in 120 to a point just east of Thurgoland tunnel, and the rest at 1 in 131-160. Electric haulage of public trains is due to begin on September 20. Main supply is from the Yorkshire Electricity Board at Neepsend, and substations are situated at Neepsend and Wharncliffe Wood, between Sheffield Victoria and Barnsley Junction, and at Orgreaves, east of Sheffield Victoria.

(Continued on page 329)

RAILWAY NEWS SECTION

PERSONAL

Mr. R. G. S. Hoare, M.V.O., M.B.E., has been appointed Chief Information Officer in the Ministry of Transport & Civil Aviation with effect from September 6. He will be assisted in matters affecting Civil Aviation by Mr. V. Alford.

Mr. Fleetwood C. Pritchard has relinquished his appointment as Honorary Adviser on Public Relations at his own

Engineer, Tanta (1931), and, in the same year, Deputy Chief of the Projects Office. In 1932, he was appointed Assistant Signal Superintendent, which position he held until the outbreak of war in 1939, when he became Chief of the Projects Office. He held this position until 1942, when he was appointed Signal Superintendent. In 1949 he became Second Deputy Chief Engineer, and, in 1950, Deputy Chief Engineer. In 1951, he was appointed Chief Engineer,

General Belgrano Railway in 1951, with which position he combined that of Technical Secretary of the General Roca Railway. In 1952, he was appointed Chief of the Way & Works Department, General Urquiza Railway, the position he now relinquishes.

The following appointments have been announced by Argentine Railways:—

Mr. Isidoro Gonzalez has been appointed Administrator General, and Mr. E. Bal-



Mr. Gamal El-Din Badawy Hamdy

Appointed General Manager,
Egyptian Republic Railways



Mr. Adolfo Kirkerup

Appointed Acting Administrator General,
General Urquiza Railway, Argentine

request. Mr. Pritchard, who has been closely concerned with the lay-out and presentation of the new Highway Code, will still be available for consultation on questions of road safety publicity.

Mr. Gamal El-Din Badawy Hamdy, A.M.I.C.E., A.M.I.Struct.E., M.I.R.S.A., who, as recorded in our August 20 issue, has been appointed General Manager of the Egyptian Republic Railways, was born on December 10, 1899. He graduated from the Royal School of Engineering, Civil Section, Giza, in 1922, and entered Sheffield University in September of that year, where he obtained his B.Eng. with first class Honours in 1925 and his M.Eng. in the following year. Mr. Hamdy was appointed Assistant Engineer, New Works, Egyptian State Railways, in 1925, subsequently receiving practical training with the L.N.E.R. from 1926 until 1928. On his return to Egypt he was appointed Resident Engineer, New Works. He subsequently became District Engineer, Gabbari (Alex.) (1930), Deputy Divisional

Way & Works. Mr. Hamdy became Under-Secretary of State, Ministry of Communication, in 1953, and, in July last year General Manager, of the Egyptian Republic Railways.

Mr. Adolfo Kirkerup, Chief of Way & Works Department, General Urquiza Railway, who, as recorded elsewhere in this issue, has been appointed Acting Administrator General of that system, took his degree as Civil Engineer at the University of Buenos Aires in 1942. The following year, he joined the Argentine State Railways as Assistant Construction Engineer on the Superi-La Cocha branch. Mr. Kirkerup was subsequently employed on the construction of the Pedro Vargas-Malargue line (now part of the General San Martin Railway), and afterwards as Construction Engineer of the Ing. Jacobacci-Esquel line (now part of the General Roca Railway). He subsequently became, successively, Divisional Traction Superintendent in Cordoba and District Engineer at Salta, being appointed Chief of the Traffic Department of the

zarini, Chief of Mechanical Department, of the General Belgrano Railway.

Mr. J. A. Fanjul has been appointed Acting Administrator General, Mr. G. Mazzotta, Acting Chief of Traffic Department, and Mr. C. A. Luppi, Acting Chief of Way & Works Department, General Bartolome Mitre Railway.

Mr. B. Hernandez has been appointed Chief of Traffic Department, General San Martin Railway.

Mr. C. F. D'Alesio has been appointed Chief of Way & Works Department, and Mr. E. F. Albonico, Chief of Stores Department, General Roca Railway.

Mr. A. Kirkerup has been appointed Acting Administrator General, Mr. A. S. Butti, Chief of Way & Works Department, and Mr. J. Biagosch, Chief of Stores Department, General Urquiza Railway.

Mr. C. M. Bay has been appointed Chief of Stores Department, and Mr. O. Ardito becomes Chief of the Mechanical Department, Domingo Faustino Sarmiento Railway.

September 17, 1954



Mr. S. A. Suhrwady,
Appointed General Manager,
North Western Railway, Pakistan

Mr. S. A. Suhrwady, General Manager of the Eastern Bengal Railway, Pakistan, has been appointed General Manager of the North Western Railway, Pakistan, succeeding Mr. M. J. Chughtai.

Mr. Saghir-ud-Din Ahmed Suhrwady, M.B.E., General Manager of the Eastern Bengal Railway, Pakistan, who, as recorded above, has been appointed General Manager of the North Western Railway, Pakistan, was born on August 8, 1904. He joined the Eastern Bengal Railway on March 12, 1928, as a probationer in the Transportation (Traffic & Commercial) Department of the Superior Revenue Establishment of State Railways. He was confirmed as Assistant District Traffic Superintendent on March 12, 1931, and promoted to be District Traffic Superintendent on April 14, 1934. From March 8, 1938 to October 9, 1940 he officiated as D.I.V.S. on the Eastern Bengal Railway. During the 1939-45 war, Mr. Suhrwady served in the D.I.U., attaining the rank of Hon. Lt.-Colonel. He was awarded the M.B.E. in January, 1943. In October, 1942, he was appointed Superintendent, Transportation (Senior Scale) on the Bengal Assam Railway, becoming Principal Railway Liaison Officer on March 1, 1944. Since that date he has served in various capacities, including that of Divisional Superintendent, Principal Railway Liaison Officer, Deputy Chief Traffic Manager, Deputy General Manager (Personnel), and Deputy General Manager. On August 15, 1947, he was appointed Traffic Manager on the Eastern Bengal Railway, becoming General Manager on November 21, 1947. Mr. Suhrwady was a member of the Indian Railways delegation to the International Railway Congress held at Lucerne in 1947. From August 1, 1950, he served with E.C.A.F.E. as Chief of the Transport Division. He took up his new appointment on September 1.

We regret to record the death on July 7, at the age of 53, of Mr. M. S. Iyengar, District Engineer, Southern Railway, India.

Mr. G. Viswanathan, Deputy Chief Engineer (Construction), Southern Railway, has been appointed Chief Engineer, Western Railway, India.

We regret to record the death on July 19, in his 53rd year, of Mr. S. R. Sarma, Chief Operating Superintendent, Southern Railway, India. Before entering the service of the Madras & Southern Mahratta Railway in 1924, Mr. Sarma was a lecturer in the Meenakshi College at Chidambaram. During his railway career he served as District Traffic Superintendent at Bangalore, Gunatalak, and Bezwada, and Harbour Traffic Superintendent at Mormugao Harbour. He was appointed joint Public Relations Officer of the Madras & Southern Mahratta and South Indian railways in 1948, becoming Chief Operating Superintendent of the M. & S.M. Railway in 1950, and, after integration in 1951, of the Southern Railway. Mr. Sarma had made extensive tours of Europe and America, during which he gained first-hand knowledge of overseas transport problems.

Mr. H. J. G. Francis, Advertisement Display Officer, Commercial Advertisement Division, British Transport Commission, has assumed control of the billposting aspect of the Division's activities.

Dr. A. Mc.D. Gillespie, M.R.C.S., L.R.C.P., D.P.H., has been appointed Divisional Medical Officer, London Bridge, vice Dr. W. A. H. N. Bell, who is retiring on September 30.

Mr. P. R. Dashwood, B.Sc., A.R.I.C.S., A.A.I., Assistant to Estate Surveyor, Eastern Region, British Railways, has been appointed Assistant Estate Surveyor, Eastern Region, succeeding Mr. J. Chappell, retired.

Mr. S. C. Townroe, Assistant District Motive Power Superintendent, Eastleigh, Southern Region, British Railways, has been appointed Assistant District Motive Power Superintendent, Nine Elms (located at Woking), vice Mr. G. M. Thompson.

Mr. C. W. J. Taffs, M.Sc. (Eng.), M.I.Mech.E., has been appointed Secretary to the Diesel Engine Users Association.

Mr. G. H. M. Houston, B.Sc., A.M.I.E.E., has joined Brookhirst Switchgear Limited as Manager of the company's power applications branch.

Mr. J. G. McLeod, A.M.I.W.M., A.M.Inst.B.E., has been appointed Works Manager of the Willesden factory of Bowden (Engineers) Limited.

Mr. H. W. Sansum, Sales & Service Manager of the Vehicle Division of Sentinel (Shrewsbury) Limited, will in future combine responsibility for vehicle sales with his duties as general service manager.

Mr. R. M. Grant, B.Sc., M.I.E.E., has been appointed Manager of the Plant Sales Department of the British Thomson-Houston Co. Ltd., in succession to Mr. R. S. Jones, M.I.E.E., who has retired after 41 years of service with the company.

Mr. Clifford Sturdy, B.A. (Cantab.), has been appointed Assistant Chief Engineer (Projects) to Davy & United Engineering Co. Ltd.

We regret to announce the death, on September 3, at the age of 69, of Dr. E. L. Montagnon, Ph.D., M.I.C.E., a Director of Ransomes & Rapier Limited.

Colonel H. Riggall, Managing Director of Ruston & Hornsby Limited, is on a six-weeks' tour in Canada and the United States. He will visit many of the company's distributing agents in Canada, and will inspect the new Toronto premises opened last autumn. In the United States, he will visit the Bucyrus-Erie works, a concern closely associated with the Ruston-Bucyrus Company in London.

INSTITUTION OF LOCOMOTIVE ENGINEERS AWARDS, 1953-54

The following awards will be presented by Mr. R. C. Bond, the retiring President of the Institution of Locomotive Engineers, at the General Meeting to be held on September 22, 1954 :—

(1) *The Frederick Harvey Trevithick Award* (£30) to E. S. Cox (Vice-President) for his paper "Experiences with British Railways Standard Locomotives."

(2) *The Institution of Locomotive Engineers Award* (£20) to S. O. Ell for his paper "Developments in Locomotive Testing."

(3) *The Charles S. Lake Award* (£10) to A. W. Manser (Member of Council) for his paper "The Wearing Parts of Electric Rolling Stock—a Review of the Experience on the London Transport System."

(4) *The Alfred Rosling Bennett Award* (£5) to H. I. Andrews, Ph.D. (Member) for his paper "The Measurement of Train Resistance."

(5) *The Stewart Dyer Awards.*

(i) (£10) to C. H. De Sousa (Member) for his paper "Design of Indian Railways Passenger Coaching Stock for Greater Comfort."

(ii) (£5) to J. N. Compton, O.B.E. (Member) for his paper "Production of Steel Fireboxes."

In addition to the above the Council has made a Special Award of £5 to Professor W. A. Tuplin (Associate) for his paper "Some Questions About the Steam Locomotive."

Staff and Labour Matters

B.T.C. offer accepted by N.U.R. as basis for negotiation

After the meetings between Sir Brian Robertson, Chairman of the British Transport Commission, and leaders of the N.U.R. and the T.S.S.A., on September 8, it was reported that some progress had been made towards a settlement of the difficulties which had arisen in connection with railway wages.

Separate meetings were held with each union. After the meeting with the N.U.R. it was stated that Sir Brian Robertson had offered certain clarification of the Commission proposals and the representatives of the N.U.R. undertook to report back to their executive committee.

A joint statement issued after the T.S.S.A. meeting said, "The situation was clarified and some progress was made. A further meeting will be held shortly."

No information has been revealed as to the nature of the latest B.T.C. proposals, but Mr. J. S. Campbell, General Secretary of the N.U.R., who came to the meeting specially from the Trades Union Congress at Brighton, said "We will now be continuing negotiations on a much more solid basis than the vague suggestion that Sir Brian Robertson made last week."

The proposals were considered by the N.U.R. executive on September 9, after which they were referred back to the union's negotiating committee for examination in detail.

B.T.C. Offer as Basis of Negotiation

Hopes of settling the dispute were improved on September 13, when the N.U.R. executive decided to accept as a basis for further negotiation last week's offer by Sir Brian Robertson.

The following statement was issued later in the day by the Commission:

"At a meeting on September 8 the Commission made an offer to the N.U.R. that, provided there was confirmation of the basis for the minimum-rated adult wages staff of £6 5s. a week and £6 7s. a week after one year's service, then an endeavour should be made to reach agreement for the highest paid wages grade, other than the footplate staff, namely, the top-rated signaller (Special 'B')."

"Further discussions could then commence as early as possible in respect to the grades between the base and the ceiling.

"The N.U.R. has now notified acceptance of these arrangements. The Commission further suggested that if its offer were accepted arrangements should also be made for an early meeting between the Commission and unions concerned with the footplate staff and salaried staff.

Further Joint Meetings

"The Commission is accordingly approaching the A.S.L.E.F. and the T.S.S.A. with a view to a joint meeting of the three unions to consider the position in the hope that agreement can ultimately be reached to cover the whole of the railway staff concerned."

Mr. J. S. Campbell announced the N.U.R. decision after a full meeting of that union's executive committee on Monday. He said:

"Substantial progress has been made, but we are a long way from settlement yet. The Commission is as anxious as we are to bring about a settlement, but there will have to be several more meetings. At our meeting today it was recommended that Sir Brian's offer be accepted as a basis for further negotiation in an effort to

secure a satisfactory settlement for all grades within the wages structure.

"The idea has been put forward that the three unions involved should get together again to restore joint discussion of common problems. The N.U.R. executive will discuss the way this can best be accomplished. At the same time we are seeking an early meeting with Sir Brian Robertson, which will probably take place this week."

Reduction in Number of Grades

Mr. Campbell also said on Monday that the N.U.R. executive could not yet make public any of the wage rates put forward in the Commission's new offer. "There has been a suggestion," he added, "by the Commission that it will attempt to reduce the number of different rates now in force. There are 66 of these at the present time and we have been pressing for the number to be reduced to 24."

A meeting between representatives of the Commission and of the three railway unions has been arranged for today (Friday), at the invitation of the Commission.

Trades Union Congress

A resolution was moved at the meeting of the T.U.C. at Brighton last week calling on the congress to declare its firm opposition to any form of wage restraint and to support any efforts to improve wages and conditions of employment. The motion was defeated by a large majority on a card vote.

Belgian National Railways Electrification

Inauguration of electric traction at 3,000 V. d.c. is announced with effect from October 17 over the Belgian National Railways lines between Brussels and Louvain and between Brussels and Alost via Denderleeuw. The new timetable, involving considerable accelerations, also is to be introduced on the Brussels-(via the direct line)-Ghent-Bruges-Ostend line over which electric trains began running in June as recorded in our July 16 issue.

Electrification of the Bruges-Knokke branch is expected to be completed in time for inauguration on January 1, 1955; this, in view of completion of the Bruges-Blankenberge branch, will complete the scheme for electrification of the coastal branches.

The sections from Louvain to Liège (completing the Brussels-Liège line) and from Brussels to Ottignies (en route to Namur and Luxembourg) are due for completion in October, 1955, and electrification through from Ottignies to Luxembourg via Namur, Jemelle, Libramont, and Arlon, in October, 1956.

Loading Gauge Restrictions

The dimensions of tunnels and overline bridges between Liège, Verviers, and the German frontier at Herbesthal are understood to be a serious obstacle to electrification of this section on the overhead system. Electrification also has been under consideration of the line from Namur via Dinant and Bertrix to Libramont (on the Brussels-Luxembourg main line) and to Virton, which gives an alternative route to Luxembourg. For the time being, however, electrification of this section is not

envisioned. Consideration is being given to the working of heavy mineral trains over this line by diesel locomotives.

The lines from Brussels to Antwerp and from Brussels to Charleroi already are electrified. No plans are announced for electrification between Charleroi, Namur, and Liège.

Electrification northwards from Antwerp to link up with the Netherlands Railways electrified system at Eindhoven, but the difference between the systems, the Netherlands Railways being at 1,500 V. d.c., creates technical difficulties.

Electric Working between Manchester and Sheffield—1

(Concluded from page 326)

The electric running shed is at Darnall. Of the three running depots, Reddish, Wath, and Darnall, Reddish is the largest. The multiple-unit stock for the Glossop and Hadfield services, and locomotives are based there, and there also is an overhead line maintenance depot.

The following contractors have been associated:

Electrification

Civil Engineering
Samuel Butler & Co. Ltd., Stanningley, Leeds
C. R. Price, Doncaster
Wellerman Bros. Ltd., Sheffield
H. Jenkinson & Sons (Doncaster) Ltd., Doncaster
Geo. Longden & Co. Ltd., Sheffield
W. G. Turpin Limited, London
Tersons Limited, London

Substation Equipment
Bruce Peebles & Co. Ltd., Edinburgh (Main contractor)
A. Reyrolle & Co. Ltd., Hebburn
British Thomson-Houston Co. Ltd., Rugby
Standard Telephones & Cables Limited, London

H. V. Cables
W. T. Henley's Telegraph Works Co. Ltd., London (Main contractor)
Standard Telephones & Cables Limited, London

Overhead Line Equipment
British Insulated Callender's Construction Co. Ltd., Kirkby, Liverpool (Main contractor)
Cargo Fleet Iron Co. Ltd., Middlesbrough
Redpath Brown & Co. Ltd., Manchester
Robinson & Kershaw Limited, Manchester
Bullers Limited, London
Switchgear & Equipment Limited, Banbury

Electrical Equipments for Locomotives
Metropolitan-Vickers Electrical Co. Ltd., Manchester (Main contractor)
Westinghouse Brake & Signal Co. Ltd., London
Pritchett & Gold & E.P.S. Co. Ltd., London

Electrical Equipments for Multiple-Unit Stock
General Electric Co. Ltd., Witton (Main contractor)
Westinghouse Brake & Signal Co. Ltd., London

Woodhead Tunnel

Civil Engineering
Balfour Beatty & Co. Ltd., London

Lighting
W. J. Furse & Co. (Manchester) Ltd.

H. V. Cables
W. T. Henley's Telegraph Works Co. Ltd., London (Main contractor)
Standard Telephones & Cables Limited, London

Overhead Line Equipment
British Insulated Callender's Construction Co. Ltd., Kirkby, Liverpool (Main contractor)
Cargo Fleet Iron Co. Ltd., Middlesbrough
Redpath Brown & Co. Ltd., Manchester
Robinson & Kershaw Limited, Manchester
Bullers Limited, London
Switchgear & Equipment Limited, Banbury

(To be continued)

SAUNDERS DIAPHRAGM VALVES.—Originally designed to provide an efficient means of control for compressed air in mines, the Saunders diaphragm valve, manufactured by the Saunders Valve Co. Ltd., has been developed by the application of natural and synthetic rubbers and flexible plastic compounds which have extended its uses to the handling of almost every type of fluid.

Sheffield-Manchester Electric Service Inaugurated

*Ceremony at Sheffield Victoria
performed by Sir Brian Robertson*

The first passenger train to be hauled electrically between Sheffield and Manchester on September 14 was an inaugural special conveying a party of railway officers and guests. The train was hauled from Kings Cross to Sheffield via Retford by class "A4" 4-6-2 steam locomotive *Dwight D. Eisenhower*. At Sheffield Victoria the party watched the steam locomotive replaced by one of the new Co-Co electric locomotives (No. 27000) for the journey thence to Manchester London Road. Sir Brian Robertson, Chairman of the British Transport Commission, officially inaugurated the new service by blowing a whistle and giving the right-away to the guard.

At a luncheon held at the Midland Hotel, Manchester, the loyal toast was proposed by Mr. C. K. Bird, Chief Regional Manager, Eastern Region. Alderman Sir William Walker, representing the Lord Mayor of Manchester whom indisposition had prevented from attending, then proposed the "Success of the Electrification Scheme." He referred to his own part, as an electrical engineer, in the original negotiations for the supply of power for the electrification, which, he said, would bring Lancashire and Yorkshire closer together.

Momentous Decision

Mr. J. W. Watkins, Chief Regional Manager, London Midland Region, in reply to Sir William Walker, said that it was a momentous day, and they were proud of the inauguration of the service. When the extension beyond Sheffield to Rotherwood was finished, both passenger and goods trains would move electrically over the whole route. He was glad to see present Sir Charles Newton, formerly General Manager of the L.N.E.R., the company which had authorised the scheme. As well as electrification, much re-signalling had been necessary. The two great cities of Sheffield and Manchester had been closely associated with the railways; the bill for the Sheffield-Manchester line had been deposited in 1836, the year in which it might be said that the foundation of British Railways was laid. He contrasted the day's journey with that of the first train between Sheffield and Manchester in 1845, when there were twenty coaches and a band to send off the train. He paid tribute to the officers and staff for their work on the electrification scheme, and specifically mentioned Messrs. A. Moss, Signal & Telecommunications Engineer, Eastern Region, and S. Williams, Signal & Telecommunications Engineer, London Midland Region, for their part in the re-signalling. Mr. Watkins looked to the traffic being forthcoming to meet the increased capacity now available.

Contribution to Cities' Prosperity

The "Cities of Manchester and Sheffield" was proposed by Sir Brian Robertson. No two cities, he said, were better known. Manchester was not only the focus of the cotton trade, but also the centre of a wide range of industries and a great port, and was famous in business and for its music and press. Sheffield was famed for its cutlery and there was no finer high-grade steel; it also had a wide range of industries. The British Transport Commission and British Railways bought much in both cities. Sir Brian Robertson hoped

that the modernised line would contribute to their future prosperity. The scheme represented the fulfilment of plans started a long time ago and its planners had planned for the morrow. He hoped that would be said in ten years' time of the present plans of the B.T.C. Re-equipment and modernisation were important; equally so was a contented, loyal, keen and efficient staff. Good wages deserved good work, and good work deserved good wages.

In his response, Alderman J. H. Bingham, Lord Mayor of Sheffield, spoke appreciatively of the cleanliness which electric working and the new Woodhead Tunnel had brought to travel between Sheffield and Manchester. Both cities hoped that the rejuvenated line would be a standard for all.

Service to Industry

Mr. C. K. Bird, proposing the toast of the guests, alluded to the happy circumstance which had brought together the civic representatives of Lancashire and Yorkshire, whose rivalries were for the moment forgotten. The presence of the Chief Inspecting Officer of Railways, whom he welcomed, no doubt signified that the line was in order. He was glad that they had with them representatives of the railwaymen and contractors, presidents of railway unions, electrical authorities and representatives of great industries, which they hoped to be able now to serve more efficiently than before. Those to whom they owed the conception and inception of the enterprise were Sir Ralph Wedgwood, former Chief General Manager, Sir Ronald Matthews, former Chairman, and Mr. H. W. H. Richards, former Chief Electrical Engineer, of the L.N.E.R.

Sir Joseph Hallsworth, Chairman of the North-Western Electricity Board, in reply, said that he would endeavour to see that the railway had both the electrical supply and load. His Board and the Yorkshire Electricity Board would co-operate in providing current. The railways were the blood stream of the nation, but needed much more capital. The present scheme would much increase the comfort of passengers over the line and he hoped the B.T.C. would be repaid a hundredfold for its outlay.

At the conclusion of the luncheon, Mr. C. K. Bird handed to Sir Brian Robertson as a memento of the occasion a motorman's key in a box.

Sir John Elliot, Chairman of the London Transport Executive was unable to be present because of labour difficulties at certain bus garages in London. Those attending the luncheon included:

Ministry of Transport

Sir Gilmour Jenkins, Lt.-Colonel G. R. S. Wilson, Mr. G. F. Stedman

British Transport Commission

Sir Brian Robertson, Messrs. J. C. L. Train, H. P. Barker, J. H. Brebner, J. Ratter, J. A. Broughall, J. H. Fraser, R. C. Bond, A. E. Robson, A. G. Hopking, R. Pattison, E. Claxton

London Midland Region

Messrs. J. W. Watkins, J. F. Harrison, S. Williams, G. Dow, E. W. Arkle, H. Randle, Messrs. W. E. N. Growdon, A. Lloyd Owen,

G. E. Proctor, C. G. Darbyshire, F. W. G. Smith, J. E. Glisby.

Messrs. J. Royston, R. M. Davis, T. W. Polding, F. W. Grocott, F. L. Jones, W. A. G. Sudaby, J. A. Knapman, J. S. Scott, R. L. McIlmoyle, C. D. Suffolk, W. G. Rose.

Eastern Region

Messrs. C. K. Bird, J. I. Campbell, E. W. Rostern, C. G. Dandridge, K. J. Cook, E. D. Trask, A. Moss.

Messrs. W. S. Barnes, L. Reeves, M. B. Thomas, G. E. Beynon, R. E. Sadler, A. S. Young, C. R. Smith, K. B. Turner.

Messrs. A. H. Emerson, K. Taylor, J. K. Lord, H. C. Johnson, E. J. Stephens.

Messrs. A. R. Ewer, G. Ford, E. R. Williams, R. B. Temple, P. Williamson, F. Ward, A. E. Megson, M. H. Harbinson.

Contractors

Messrs. J. E. Kelly, Wellerman Bros. Ltd., O. J. Crompton and C. E. Allen, British Insulated Callenders Construction Co. Ltd., A. V. Burnett, W. T. Henley's Telegraph Works Limited, A. J. Coveney, A. Reyrolle & Co. Ltd., O. L. Robson, Bruce Peebles & Co. Ltd., G. A. Ashton, British Thomson-Houston Co. Ltd.

Messrs. C. Gordon White, Standard Telephones & Cables Limited, F. A. Manley, General Electric Co. Ltd., J. S. E. Rundle, B.E.A.M.A., A. H. Carmichael, Cable Makers Association, John N. Hancock, George Longden & Son Limited, J. G. Butler, Samuel Butler & Co. Ltd., A. E. Grimsdale, Metropolitan-Vickers Electrical Co. Ltd.

Also present were:

Alderman Sir William Walker (representing the Lord Mayor of Manchester), Alderman J. H. Bingham, Lord Mayor of Sheffield, Sir Michael Barrington-Ward, Messrs. R. A. Riddles, H. H. Swift, Mechanical & Electrical Engineer, Southern Region, H. W. H. Richards, N. A. Pinches, President, A.S.L.E.F., J. Haworth, President, T.S.S.A.

Messrs. R. L. Walsh, Master Cutler, Sheffield, H. E. Pardoe, President, Manchester Chamber of Commerce, Sir Robert J. M. Inglis, Sir Charles Newton, Messrs. G. B. Barton, W. Y. Sandeman.

Sir Joseph Hallsworth, Chairman, North Western Electricity Board, W. L. Kelly, Transport Officer, Headquarters, National Coal Board, R. Ringham, Chairman East Midlands Division, National Coal Board, L. P. Parker, Allan Pegler, Managing Director, Northern Rubber Company, R. A. Fricker, Managing Director, Thrushley & Co. Ltd., J. C. Way, Metropolitan-Vickers Electrical Co. Ltd., R. Cartlow, Chairman & Managing Director, The Exors of James Mill Limited.

Messrs. J. P. Bennett, Managing Director, Taylor Bros. & Co. Ltd., F. Pickworth, Managing Director, English Steel Corporation, S. R. Howes, General Manager, Samuel Fox & Co. Ltd., R. A. Kirkby, Managing Director, General Refractories Limited, H. H. Draycott, Director & Secretary, Renishaw Iron Co. Ltd., S. W. Martin, Chairman & Managing Director, Staveley Iron & Chemical Co. Ltd., A. Jollie, General Manager, Steel Peach & Tozer, H. W. Secker, Chairman, T. W. Ward Limited, J. W. Owston, Managing Director, Cravens Railway Carriage & Wagon Co. Ltd.

LIGHT RAILWAY TRANSPORT LEAGUE: DIESEL RAILCAR TOUR.—The Light Railway Transport League has arranged a visit to the Lambourn branch of the Western Region, on October 10. The party will travel by special diesel railcar, leaving Clapham Junction at 10.30 a.m. Tickets, 22s. 3d., can be obtained from Mr. F. W. Hunt, 71, Princes Avenue, Palmers Green.

Ministry of Transport Accident Report

Goswick, October 28, 1953: British Railways, North Eastern Region

Colonel W. P. Reed, Inspecting Officer of Railways, Ministry of Transport and Civil Aviation, inquired into the accident which occurred at about 1 a.m. on October 28, 1953, at Goswick when the 9.15 p.m. express, Glasgow to Colchester, consisting of four bogie coaches, four bogie vans and a 4-wheeled fish van drawn by class "A" 2/1 engine No. 60509, travelling at 55 m.p.h. under clear signals, became derailed at the facing points of the connection to the independent line, which had become disarranged by a loose part of the centre cylinder valve gear which was hanging down. Its bottom lug

(A diagram of the layout of lines, and so on, was given in our issue for July 16, 1948, page 81, in connection with Colonel A. C. Trench's report on the accident of October 26, 1947.)

The Course of Events

There was no conflict of evidence in this case. While the train was some distance away the two nuts on the top bolt holding together the two halves of the eccentric strap worked loose and fell off and the halves began to open out about the bottom fastening bolt under the alternating pressure of the revolving eccentric sheave,

while the bolt was prevented from working out of the rear half by the brass cap over the oil hole in the line of withdrawal of its head. There was no sign of a sheared split pin in the hole in the top bolt and the one in the bottom foot bolt was found to be $\frac{1}{16}$ in. instead of the correct $\frac{1}{16}$ in. dia. There was no sign of undue friction on the bearing surfaces of the sheave or strap liners. The main piston valve was free in its liner and there was no flawed material in any part of the valve gear.

The driver said the regulator was nearly closed approaching Goswick and the engine was running well until he felt a bounce followed by another at the points. He made a full brake application, realising the engine had left the rails.

The signalman heard a noise as of something "catching and bumping on the sleepers"; he sent "stop and examine" and then "obstruction danger."

The Engine

The engine was built in 1944 and had run 57,000 miles since overhaul at Doncaster in February, 1953, and 11,500 since the last "standard" examination at Haymarket Shed, Edinburgh, on August 18. A comprehensive examination and repair is required at shed after about 30,000-36,000 miles after leaving the repair works. After further similar mileage it is sent to works again for overhaul. This Pacific type engine has three cylinders and three separate sets of Walschaerts' valve gear.

Preparation of Engine

Colonel Reed found that examination of the engine a few hours before starting had followed normal procedure. Placed in steam over a pit with motion in the most favourable position an examining fitter inspected around both sides and underneath, noting a few minor defects which had to be rectified. He was satisfied it was in good order again. Using a hammer, as usual, he satisfied himself that the top eccentric strap bolt nuts were tight. He saw a split pin in that bolt but admitted he did not have a very clear recollection of this. Each fitter has to examine about 15 engines in an eight-hour shift; it is not to be expected that all details can be remembered.

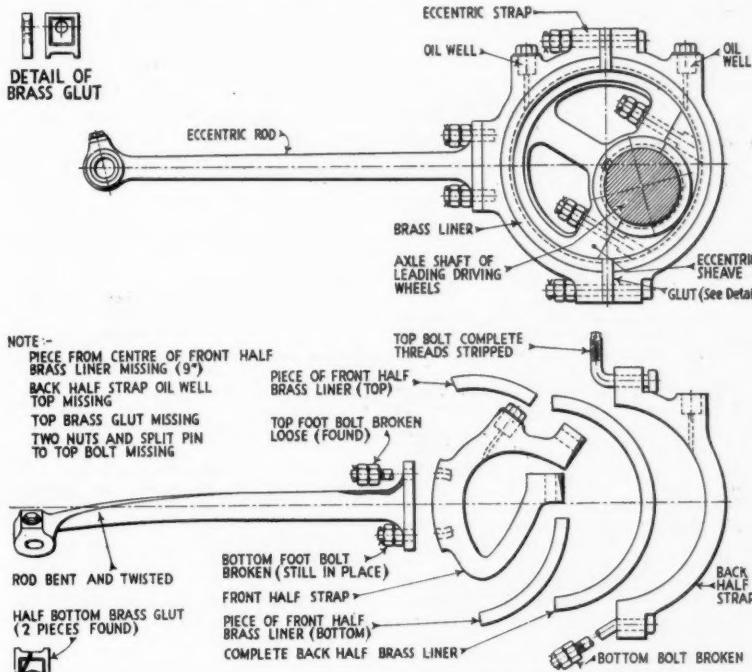
Access to the top of the centre eccentric gear is most restricted. It is difficult to get into position to see the end of the top bolt holding the two halves of the strap together, even with the engine favourably placed. It is above eye level from the pit. A man must seat himself on the brake hanger, steady himself with one hand and hold his carbide lamp, using the other hand to feel the nuts and split pin or test with a hammer.

While this fitter was examining the preparing driver and fireman arrived. The driver attended to the oiling and checked all moving parts and their fastenings with his fingers. The fireman built up the fire and tidied up generally. This driver said he felt the split pin above mentioned but neither he nor the fitter took note of the undersized one in the bottom foot bolt.

The driver running the train did not examine the engine underneath on taking charge at shed.

Maintenance of Motion

Valve motion does not require much attention. Once properly fitted at periodical overhaul it is expected to remain in good



Drawing showing (above) the assembled eccentric rod and strap concerned in the derailment at Goswick, and (below) their condition after the accident

caught in the stretcher bar and pulled open the left-hand switch rail.

The flange of the leading coupled wheel ran through the gap, followed by all the left-hand wheels behind, derailing the train off the diverging stock rail onto the sleepers of the turnout. The engine bogie wheels had passed correctly over the points but must have been pulled off when the coupled wheel was deflected at the nose of the crossing, but the whole train kept well in line nearly parallel to the up main track and stopped with the engine leaning to the side 270 yd. beyond the point of derailment.

Damage to the bodywork of the coaches was slight. Only one of the 58 passengers required first aid and none of the train crew was injured. A relief train arrived 3 hr. later after single-line working had been introduced. Express services were maintained but there was some dislocation to slow passenger and goods. Normal working was resumed next day in the afternoon. It was a dry, clear night.

crushing and breaking the bottom glut until it fell out. The bottom joint was then loose and the bolt quickly became bent as the two halves of the strap opened more and more until they fell away from the sheave. The strap hung suspended on the end of the eccentric rod, the front half just clear of the sleepers but the rear bouncing over them for about 115 yd. The bottom lug of the front half at last caught in the stretcher bar. They were found separated from the rod which, though twisted, was still connected to the expansion link at its other end. The damage to these parts is shown on the accompanying drawings with details of missing items.

Neither of the nuts belonging to the top bolt was found, despite careful search for some miles. Much of the damage to its threaded end could have been caused by the working of the two halves of the strap opening out after the nuts came off. The thread must have been rubbing against the edge of the hole in the lug of the half strap

order until the next, after about 70,000 miles. At a "standard" examination it is not required to be dismantled but may be examined in position for wear and adjusted as necessary. It is also examined in position at the "X" examination required every 12-16 days, the principle of which is to give a thorough detailed examination and repair so that the locomotive shall run to the next "X" repair day with the absolute minimum of intermediate maintenance.

At such an examination on October 18 the eccentric strap was reported "wide at pulley" but the mechanical foreman passed it as fit to run. On October 22 the examining fitter noted that the top bolt nuts were loose. The fitter adjusting found the locknut to have slackened back sufficiently to curl the split pin, tightened each nut in turn and fitted a new pin which, he said, was a snug fit and had to be tapped home.

Inspecting Officer's Conclusion

Colonel Reed is satisfied that the main valve gear components were in good order when the engine left Haymarket Shed and had no weakness of design or flaw in materials. The accident occurred because the nuts on the top eccentric strap bolt became unscrewed, not possible with a properly fitted split pin outside the locknut. Even an undersized one should have checked the unscrewing. A properly fitted pin could not have fallen out during the journey though an undersized one might have, had the legs not been sufficiently splayed. Colonel Reed concludes, therefore, that there was no properly fitted pin in position when the engine left the shed, though there may have been an undersized one.

It was suggested to him that the stripping of the bolt thread might have been caused by excessive pressure, forcing off the nuts and shearing the pin but tensile tests broke similar bolts while leaving threads undamaged, which should result with proper design, and this disproved the suggestion, unless the bolt and nut threads had become badly worn. Wear in them could not be assessed but Colonel Reed sees no reason to believe they would have been allowed to get into so unserviceable a state.

Remarks

Watching an examining fitter at work Colonel Reed found the inspection seemed to be thorough but thought the attitude towards split pins far from meticulous. Undersized pins were not booked and Colonel Reed was told they were sometimes fitted because a locknut masked the split pin hole after adjustment or repair. He found no evidence that the supervising staff insisted on the proper practice of nuts being fitted so as to bring the face level with the edge of the split pin hole, either by the fitting of a washer or by filing down the face of the nut.

A derailment at Brownhill Junction, Dalry, on September 17 also was caused by the falling out of an undersized split pin fitted at Kingmoor Shed during adjustment of tender brake gear. Carelessness in fitting such pins was responsible for three accidents in 1952 on British Railways. Although only 2-3 per cent of the accidents reported to the Minister each year are attributable to locomotive defects it may be desirable to impress on all concerned once again that inattention to detail in fitting and examining work at sheds may have very serious consequences.

This derailment occurred from a different cause, at the same facing connection as that on October 26, 1947. Its less serious consequences may be ascribed to the fact that the train was not diverted; the coaches therefore maintained their alignment.

Contracts & Tenders

The Pacific Great Eastern Railway (British Columbia) has ordered 7,500 tons of rails and 300 tons of angle iron from the United Steel Companies Limited. The order, valued at about \$1,000,000, is a repeat of an order placed last year.

The Spanish National Railways (Renfe) have ordered 14 diesel-electric locomotives of 1,600-1,750 h.p. from the U.S.A.

Schindler Wagons S.A., of Pratteln, Switzerland, has received from the Chilean State Railways a further order for two diesel-mechanical railcars, making 18 in all.

Usines Emile Henricot S.A., of Court-St. Etienne, is constructing for the Belgian National Railways 500 one-piece cast-steel bogie frames for multiple-unit electric trains; each bogie is to have one motored axle and one carrying axle.

Société Alsacienne de Constructions Mécaniques has received from the Egyptian Republic Railways an order for 20 main-line 4-6-2 standard-gauge steam locomotives with two 22 in. by 28 in. cylinders, 6 ft. 9 in. wheels, 225 lb. boiler pressure, and 109 tons (locomotive) weight.

British Railways, North Eastern Region, have placed orders as follows:

Stenners of Tiverton, Limited, Tiverton: provision of long band sawing unit, etc., Faverdale Wagon Works

E. Davis (Fixers) Limited, York: demolition of forecastle roof and erection of canopy, Bradford Forster Square Station

British Railways, Eastern Region, have placed the undermentioned contracts:

Steels Engineering Products Limited, Sunderland: supply and delivery of two Model S.1210 Aeneas Coles full-circle slewling, diesel-electric mobile cranes

John Boyd & Co. (Engineers) Ltd., Annan: supply, delivery and erection of one 50-ton capacity locomotive coaling plant for Plaistow Motive Power Depot

Ransomes & Rapier Limited, Ipswich: supply and delivery of two Rapier 7 standard diesel-electric cranes with canvas side screens and additional equipment for Commercial Superintendent's Department

New contracts placed by the London Midland Region of British Railways include:

West's Piling & Construction Co. Ltd., London, W.C.2: piled foundations for staff amenities building at Spen Dyke

John Laing & Son Ltd., Carlisle: shunters' accommodation at Peteril Bridge, Carlisle

W. G. Kaleyards Limited, Chester: patent roof glazing for wagon repair shop at Salford, Hope Street Depot

Wellerman Bros. Ltd., Sheffield: relining of air shaft No. 2 in Blea Moor Tunnel, No. 72, Settle and Carlisle line

G. F. Tomlinson & Sons Ltd., Derby: steel sheet piling to River Trent at Hay Wharf, Burton-on-Trent

The British Challenge Glazing Company, London, E.15: patent glazing and renewal of roof coverings of Engine Shed No. 3 at Nottingham Motive Power Depot

Edward Wood & Sons Ltd., Derby: improved smoke uptakes to No. 1 engine shed roof, Saltley Motive Power Depot

The High Commissioner for India invites tenders for locomotive fireboxes. See Official Notices on page 336.

The High Commissioner for India is asking for tenders for wheels and axles. Full details appear under official notices on page 336.

The Special Register Information Service, Export Services Branch, Board of Trade, announces a call for tenders for equipment for improvement of the facilities at Corral Bay, Chile, issued by the Directorate of Port Works, Santiago, Chile. The requirements are:

Four mechanical shovels
One crane, 10 tons
Four diesel hydraulic locomotives
20 flat cars, 20 tons
15 flat cars, 40 tons
20 flat cars, 12 tons
480 tons rails
40 switches
Two rail weighing machines, 50 tons
One diesel electric plant, 75 kw.
Two portable diesel compressors
One cement mixer, 50 cu. ft.
Three scows, 150 tons each.

Tenders should reach the Directorate of Port of Works, Ministry of Public Works, Santiago, Chile, by October 6. A copy in Spanish of the tender documents, including specifications and conditions, may be obtained on loan from the Branch (Lacock House, Theobalds Road, London, W.C.1).

The Director-General of Supplies & Disposals, New Delhi, invites tenders for:

- (a) 1,974 brake beams, complete
- 987 brake clutch adjuster assemblies
- 987 brake pull rods
- (b) 300 axlebox bronze bearings
- (c) 53] couplers MCA, with
- 53] lifting gear
- (d) 15,682 clips for train pipes
- (e) 35 Martine-type buffers
- 58 couplers, central, A.B.C., new type

Tenders are to be submitted to the Director-General of Industries & Supplies, Shahjahan Road (Section SRI), New Delhi, quoting the following references: (a) SRI/16184-E/II; (b) SRI/16758-E/IV; (c) SRI/16702-E/III; (d) SRI/16601-E/II; (e) SRI/16624-E/III.

They will be received up to 10 a.m. on: (a) (b) (c) October 8; (d) October 10; (e) October 15.

The Special Register Information Service of the Export Services Branch, Board of Trade, reports that the Director de Obras Ferroviarias, Morande 71, 2 piso, Santiago, Chile, is calling for tenders for:

25 locomotives
129 cars
8 coaches
8 gang trolleys
6 railcars
2 snowploughs
2 mechanical shovels
4 bulldozers
4 light trucks
6 6-ton trucks
4 "jeeps"
2 station wagons

The closing date for the receipt of tenders, which should be sent to the address above, is October 30.

A copy of the tender documents including specifications and conditions of tender (in Spanish) may be obtained on loan by United Kingdom firms on application to the Branch (Lacock House, Theobalds Road, London, W.C.1).

The Director-General of Supplies & Disposals, New Delhi, is inviting tenders for the following:—

- (a) 400 axleboxes, 10 in. × 5 in. journals
Delivery is required by January 31, 1955, or earlier
- (b) 37 flushing cisterns for upper class coaches
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Tenders are to be submitted to the Director-General of Industries & Supplies, Shahjahan Road (Section SRI), New Delhi, quoting reference SRI/16787-E/1 for (a) and SRI/16071-E/1 for (b). They will be received up to 10 a.m. on (a) September 28, (b) September 30.

Forms of tender are only available for purchase in India from the Deputy Director-General (Supplies), Directorate General of Supplies & Disposals, New Delhi; Director of Supplies & Disposals, Bombay or Calcutta; Deputy Director of Supplies & Disposals, Madras.

If the date for the receipt of tenders does not allow sufficient time for tenderers to obtain tender forms from India, they may submit their quotation to India in their own letter form or by telegram so long as all essential particulars are given and provided they simultaneously apply for the tender forms and return them duly completed as quickly as possible on the basis of advance quotations already submitted.

A copy of the tender form can be examined at the above address on application to the "CEN" Branch and the drawing can be seen at the offices of Hodges Bennett & Company, 59-60 Petty France, London, S.W.1, from whom copies may be obtained at a fixed price per sheet.

Aldersgate Station Roof to be Removed

The removal of the 91-year-old arched roof above Aldersgate Station, London Transport, due to begin almost immediately, severs a link with the earliest days of the London Underground. When the station came into use in December, 1865, less than two years after the opening of the Metropolitan Railway, the 308-ft.-long light ornamental iron and glass roof spanned 80 ft. across four tracks and three platforms, covering an area of some 26,000 sq. ft.

This was due to the fact that the extension of the Metropolitan from Farringdon to Moorgate coincided with the construction of the "Widened Lines," designed to link the main lines into St. Pancras and Kings Cross with the City; these tracks ran parallel to and south of this section of the Metropolitan Railway.

War Damage

Because of damage during the last war, much of the original roof had to be removed and the arch ribs and purlins exposed to the weather; this, with the corrosive atmosphere from steam traffic on the Widened Lines, has contributed to the general deterioration of the ironwork. A contract has been let to the Demolition & Construction Co. Ltd. to carry out the removal.

Each of the arch ribs weighs 3·7 tons and the total weight of the ironwork involved is 106 tons.

As the station lies in the centre of a severely bombed area, low-level roofing will be provided over the platforms until re-planning of the surrounding district has been settled.

Notes and News

Japanese Tender for Indian Locomotives

—The amount of the quotation by a Japanese locomotive manufacturing group for 100 "WG" locomotives, referred to in the editorial article "U.S.A. Share in Indian Order" in our September 10 issue, should have been given as \$81,470.

Designing Draughtsman, Grade II, Required.—Applications are invited for the post of designing draughtsman, grade II, required by the East African Railways & Harbours Administration, for one tour of 40 to 48 months with prospect of permanency. See Official Notices on page 336.

Locomotive Falls Down Shaft.—A diesel locomotive pulling a load of steel plunged down a shaft at the Loraine gold mine, near Odendaalrust, South Africa, on September 9. It crashed into a double-deck cage containing 72 Africans, which was some 4,700 ft. below ground level. Ten Africans were killed and three injured.

Licence for Motorcoach Transport of Dogs.—An excursion and tour licence was granted by the North Western Licensing Authority recently to Barton Tours, of Oldham and Manchester, for the carriage of dogs and their owners in specially adapted motorcoaches to and from shows. The coaches are to be provided with pens for the larger dogs and the smaller ones will travel in baskets. The granting of the licence was opposed by the British Transport Commission; a witness for British Railways agreed at the hearing before the Licensing Authority that, if passengers in a train compartment objected to the presence of a dog, it had to go in the guard's van, where it had to be chained and muzzled. For the applicants, it was claimed that the road travel would obviate

much waiting for trains and the service would benefit dogs and owners. The Licensing Authority (Mr. F. Williamson) said he considered the experiment fully justified.

Associated Electrical Industries Limited Interim Dividend.

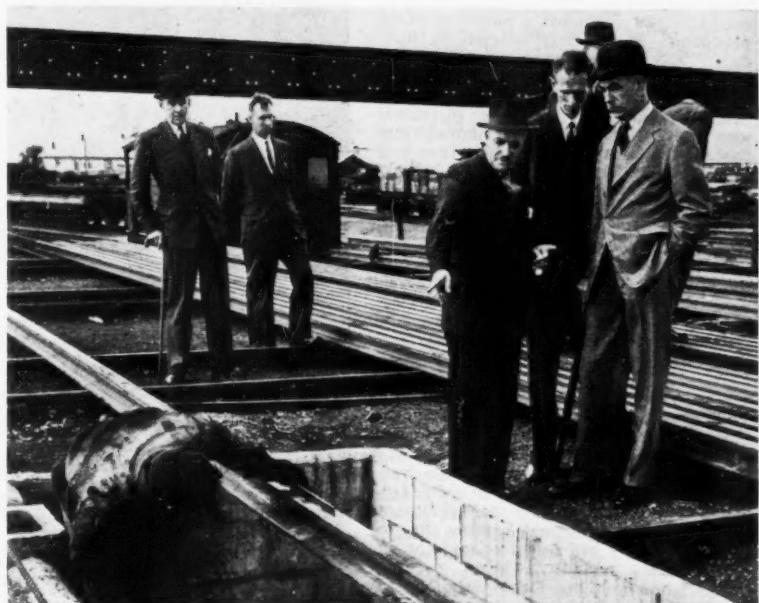
—The directors of Associated Electrical Industries Limited announce the payment on October 12 of an interim dividend of 4 per cent, less tax, on the ordinary stock on account of the year 1954.

Mumbles Railway & Pier Company.—The revenue balance of the Mumbles Railway & Pier Company for 1953 was £7,177. Royalty payable amounted to £4,556. Tax was £627 and dividends take £2,105. The balance carried forward is £2,117 (£2,306). The capital account debit is £1,104.

Crewe Works Training School.—The first 20 boys were to be taken into the Works Training School, Crewe, London Midland Region, on September 13. The offices and classrooms will be ready in the new year and it is hoped to have an official opening of the school towards the end of next summer. Mr. Anthony Sadler, Assistant (Plant & Machinery), at Crewe Locomotive Works, has been appointed Chief Instructor.

French Cross-Channel Steamer to be Transferred to British Railways.—The cross-Channel passenger steamship *Londres*, 2,670 tons gross, is to be operated in future by British Railways instead of the French National Railways. The *Londres* is at present undergoing repairs and overhaul at Dieppe, and will then proceed to Cardiff for further repair work. She is expected to resume service next summer, and will replace the 26-year-old British Railways steamship *Worthing*, 2,343 tons gross, which is to be sold. The

Sir Brian Robertson in the Southern Region



Sir Brian Robertson, Chairman of the British Transport Commission, inspecting flash-butt welding of rails at the Redbridge Civil Engineering Works, Southampton, on a recent tour. Mr. D. Slater, Works Manager, is demonstrating the process

Londres will then operate on the Newhaven-Dieppe route with the *Brighton*. The two British ships will work in conjunction with two French vessels, the *Arromanches* and *Lisieux*.

Derailment in Portugal.—Eleven persons are reported to have been killed and 20 were seriously injured when an Algarve to Lisbon express train crashed near Odemira, about 170 miles south of Lisbon, on September 13. The engine and the first three coaches were derailed. The cause of the accident is not yet known.

Saunders Valve Co. Ltd. Results.—The group net taxed profits of the Saunders Valve Co. Ltd., show an increase of £14,064 to £87,081 for the year to April 30 last, and the board is maintaining the dividend total at 20 per cent, to which it was increased in 1952-53. The 1951-52 total dividend was 18 per cent. Profits, before tax, of £204,303 compare with £229,603; the latter figure was after providing £30,000 for contingencies and repairs. The fall is more than offset by the reduction of £39,364 in taxation provisions other than profits tax on distribution.

Capital for British Railways.—Sir Brian Robertson, Chairman of the British Transport Commission, addressed delegates to the annual conference of the Municipal Passenger Transport Association last week. In his speech he said that another link of the London-Southend electrification would soon be completed when the Shenfield-Southend Victoria section was brought into use. The cost would be some £20,000,000. People did not realise, he added, the extent to which the railways were starved of resources during the war. Much equipment was needed to make up the leeway and they felt that they would have to have some help in obtaining capital for improvements. He placed, however, greater importance on having a contented, loyal, keen, and efficient staff.

Pig Iron and Steel Production in August.—Steel production averaged 325,600 tons a week in August. This is the highest figure ever achieved in August, a month in which production is adversely affected by holidays. The average figure for August last year was 291,400 tons. The equivalent annual rates for the two years, based on August production rates, are 16,932,000 tons and 15,155,000 tons. Annual rates based on production figures for June and July this year are, respectively, 19,328,000 and 13,682,000 tons. Pig iron production in August averaged 227,400 tons a week. This is an increase of 23,000 tons a week over the average figure for August last year, and is equivalent to an annual rate of 11,823,000 tons, compared with an annual rate of 10,629,000 tons for the corresponding period last year.

Shopping Tickets in the Southern Region.—The Southern Region of British Railways is to issue, every Wednesday and Thursday, from stations within approximately 10 to 30 miles radius of London, new mid-week shopping tickets. These will commence on October 6, available outwards by any train at or after 9.30 a.m. and returning by any train from Southern Region London terminal stations up to 4.30 p.m. They will be introduced for an experimental period. Cheap evening tickets from Southern Region stations to London will cease from October 2. The new tickets offer a reduction of about 3s. from the extremities of the area. For example, a shopping ticket from Horsham

will cost 6s. as compared with the present day return ticket which is 9s. 2d. From Guildford or from Tunbridge Wells the saving will be 2s. 8d. and 3s. respectively. From stations nearer London the reduction will be proportionately less.

International Machine Tool Exhibition, London, 1956.—The next International Machine Tool Exhibition to be organised by the Machine Tool Trades Association will be held in 1956, on June 15-29, at Olympia, London.

Plan for Skyscraper on Grand Central Terminal Site.—The New York Central system, now controlled by a group of which Mr. Robert R. Young is the head, has announced that it is considering plans to erect the largest privately-owned office building in the world on the site of its Grand Central Terminal in New York. The plans, still tentative, provide for a building 80 storeys high and 275 ft. square, surmounted by an observation tower that would make the structure higher than the Empire State building, now the highest in the world. The building would contain approximately 5,000,000 sq. ft. of rentable area. It is estimated that it would cost \$100,000,000 to construct and that 60,000 office workers would use it. The New York Central owns land on both sides of Park Avenue for many hundred feet to the north.

Swansea & Mumbles Railways Limited.—The revenue balance of the Swansea & Mumbles Railways Limited for 1953 was £4,096. This compares with a balance of £4,043 for the previous year, and is after taxation of £4,423 (£4,479). Debenture interest and trustees' fees take £1,221

New Uniform for Restaurant Car Conductors



Standard uniform introduced for conductors of British Transport Commission Catering Services restaurant cars

(same), dividends take £2,749 (£2,624), and £1,171 (£1,044) is carried forward. Capital account credit balance remains at £132.

Clayton Dewandre Co. Ltd. Interim Dividend.—An interim dividend of 5 per cent, on the capital as increased by the recent scrip issue of three ordinary £1 shares for every £5 of ordinary stock held, has been declared by Clayton Dewandre Co. Ltd. The dividend in the previous year was also 5 per cent, but on the smaller capital. The board states that payment of the same rate on the increased capital must not be taken to indicate the total gross amount to be recommended for the current year.

Charles Roberts & Co. Ltd. Meeting.—At the annual meeting of Charles Roberts & Co. Ltd., held recently, Mr. Duncan Bailey, the Chairman, said that turnover exceeded £2,250,000 in value. Sales had increased by £300,000, and wages by £45,000. Costs continued to increase and it was to be hoped that these increases would not prevent the maintenance of export markets. Increased production was not due to the longer hours or harder work of the manual workers, but to labour-saving machinery. After 98 years of building wagons they had taken up carriage building, and railway officials had given them great help with their teething troubles. Contracts amounting to some £6,250,000 in value stood on the books, and the works should be fully employed for some time.

Metropolitan-Vickers Belo Horizonte Factory Opened.—The first building of the Belo Horizonte factory of Metravick do Brasil (Eletroindústria) Limitada, a subsidiary of Metropolitan-Vickers Electrical Co. Ltd., was opened on August 4, 1954, by Dr. Juscelino Kubitschek, Governor of the State of Minas Gerais. Others present included Dr. Jair Rego de Oliveira, director of the Central Railway of Brazil, Dr. Dermeval Pimenta, Administrator of the Ribeirão Preto Mineira de Viação, and Mr. J. P. Summerscale, H.M. Minister (Commercial). The principal Metropolitan-Vickers Electrical Co. Ltd. representative was the Managing Director, Dr. I. R. Cox. The purpose of the factory is to carry out heavy maintenance work for the two railways already mentioned and for other lines in Brazil.

Pinchin, Johnson & Associates Limited: Chairman's Statement.—The annual meeting of Pinchin, Johnson & Associates Limited was held in London on September 8. In his circulated statement, the Chairman, Mr. G. R. T. Taylor, said that in the year ended March 31, 1954, there was a substantial increase in the net profits of the parent company and in the consolidated net profits of the group. The value of stocks was again reduced, partly because of the fall in price levels during the year and partly as a result of the better supply position of some raw materials. Competition in the industry remained keen, but the parent company had increased the volume and the value of sales over those for the previous year. The world-wide nature of the organisation gave confidence in the company's long-term progress and prosperity. The report and accounts were adopted, and a final ordinary dividend of 17½ per cent was declared, making 25 per cent for the year.

Vickers Limited Issue Success.—The issue of £6,000,000 4 per cent unsecured loan stock, 1962-69, by Vickers Limited was heavily over-subscribed. There were some 10,000

applicants for a total of £143,300,000 of stock. The basis of allotment, in general, is 4 per cent of the amount applied for, with smaller percentages for very large applications and more favourable treatment for small applications, including a minimum allotment of £50. The issue was described briefly in our issue of September 3.

Cowans, Sheldon & Co. Ltd. Results.—The net profit of Cowans, Sheldon & Co. Ltd., for the year ended June 30 last amounted to £31,970. This compares with £40,338 for the previous year. Taxation required £48,750 (£77,500) and the staff pension fund received £3,123 (£3,025). The amount available for distribution, including £71,435 brought forward and £20,623 (nil) E.P.T. post-war refund, is £124,028. The ordinary dividend is maintained at 15 per cent. Reserves for replacement of fixed assets receive £60,000 (nil) and £51,653 is carried forward. The net current assets are £426,000 (£419,000).

Gredag Division of Acheson Colloids Limited.—Acheson Colloids Limited, 18, Pall Mall, London, S.W.1, has established a Division for dealing with Gredag greases and compounds. The Gredag range includes molybdenum disulphide greases, and also compounds without graphite, where complete resistance is sought to acids, alkalis and high pressure. A Division was established, with its own factory in 1953, to manufacture dispersions of finely divided pigments, as part of a co-ordinated plan of Acheson Industries, Inc., New York, of which Acheson Colloids Limited is a unit.

Henry Meadows Limited Exhibits at Earls Court.—Exhibits of Henry Meadows Limited at the Commercial Motor Show to be held at Earls Court, London, S.W.5, September 24 to October 2, will include a 85 b.h.p. type 4 HDC 330 horizontal diesel engine. This is a new product and is exhibited for the first time. Also displayed will be a representative range of Meadows diesel engines, including the 130 h.p. 6 DC 630 type, with a Meadows five-speed, type 22 gearbox. Sectioned models will include a 4 DC 330 diesel engine complete with a Meadows five-speed, type 250 C 5 gearbox, which is said to be suitable for application where the maximum torque does not exceed 250 lb./ft.; it is available with overdrive or direct drive top gear ratios.

Stewarts and Lloyds Exhibits at Baghdad Fair.—Stewarts and Lloyds Limited products will be represented at the British Trade Fair to be held in Baghdad, October 25 to November 8, by models and photographs of a comprehensive range of steel tubes in sizes varying from $\frac{1}{4}$ in. to 72 in. bore. The exhibits include seamless and electric resistance welded boiler and superheater tubes, pipes for high-pressure steam installations, oil-liner pipes, well-boring and casing tubes, transmission tubes and so on. Subsidiaries of Stewarts and Lloyds Limited, Tubewrights Limited and the Victaulic Co. Ltd., will exhibit examples of tubular steel products, and Victaulic joints and hose, and Viking Johnson couplings which will include a set demonstrating methods of computing bituminous lining on pipes over 16 in. bore.

Stoke-on-Trent Founders Amalgamate.—T. M. Birkett & Sons Ltd., and Billington and Newton Limited of Stoke-on-Trent, manufacturers of non-ferrous castings have amalgamated; the Board of Directors remains unchanged. The headquarters of

the company will be a newly-erected administrative block at Hanley which includes spacious office accommodation, drawing offices, and a laboratory. Production includes castings in light-alloy, aluminium, manganese, phosphor bronze, and gunmetal, up to ten tons in weight, Birse aluminium bronze castings, it is stated, are guaranteed to withstand any hydraulic pressure. Other products include centrifugal-cast wheel blanks, and chill-cast phosphor bronze rods and tubes for bushes and bearings.

Departure of England Cricket Team.—On their departure from St. Pancras for Tilbury, en route for Australia, on September 15, Len Hutton and his test team were seen off by Mr. J. W. Watkins, Chief Regional Manager, London Midland Region. Mr. Watkins gave Hutton a personal message from Sir Brian Robertson, Chairman of the British Transport Commission, wishing him success on the tour.

Diesel-Powered Muir-Hill Shunter.—E. Boydell & Co. Ltd., has designed a diesel-powered Muir-Hill shunter which has been specially modified to reduce fire risk. The machine is provided with a special frame and buffer plates, with low multi-jaw type couplings to facilitate easy towing. The exhaust gases are passed through a water-filled quencher, mounted in the near side ballast box, a feature which eliminates the risk of live sparks from the exhaust. Compressed-air starting is employed through a self-contained, spark-free system, comprising a compressor and receiver and air motor mounted in place of the normal starter motor. Working lights are operated by a totally-enclosed slave battery, and all wiring embodies double pole circuits. The machine has a maximum drawbar pull of 6,000 lb. In handling railway wagons the rated capacity quoted is 400,000 lb.

Ransome & Marles Bearing Co. Ltd. Results.—The directors of Ransome & Marles Bearing Co. Ltd. recommend a final dividend of 7½ per cent plus a bonus of 2½ per cent for the year ended June 30, 1954. This dividend is on the capital doubled recently to £2,000,000 by an issue of fully paid shares. An interim dividend of 7½ per cent has already been paid on the smaller capital. This compares with a total of 25 per cent, including a 5 per cent bonus, last year on the former capital. Group profits were £1,016,894 (£1,004,338), and taxation took £400,256 (£414,757). Depreciation allowed was £262,297 (£257,151) and net profits were £354,341 (£332,430). The net profit attributable to the holding company was £302,115 (£301,928). General reserve is allotted £100,000, special pension fund trustees £10,000, and £299,701 (£261,836) is carried forward.

Powers-Samas Exhibits in Manchester.—A new range of their accounting machines will be exhibited by Powers-Samas Accounting Machine (Sales) Limited at the Business Efficiency Exhibition to be held in Manchester, September 27 to October 2. The exhibits will include a series of machines which have not previously been shown outside London, and will include EMP model B2 Powers-Samas electronic multiplying punch, which not only multiplies but also does cross addition, subtraction and summarisation. The machine feeds and punches 7,200 cards an hour, irrespective of the number of digits. A mark sensing punch, an entirely new machine, which electronically converts

ordinary pencil marks on cards into holes at a speed of 6,000 cards an hour, and which includes an automatic checking device, will also be included. Up to 27 columns of information on one card can be marked, punched and checked.

Cheap Excursions from London to the North.—From September 24 until December 17 inclusive, excursion facilities will be available each Friday night from Kings Cross to Darlington, Durham, Newcastle, and York. Passengers availing themselves of this facility will be able to have a full day in these places before leaving for London either late Saturday night or early Sunday morning. The train by which excursion ticket holders may travel will depart Kings Cross 11.45 p.m., with a corresponding late night train for the return journey. The third class return fares will be: Darlington 3s.; Durham 40s. 6d., Newcastle Central, 42s. 6d., and York 37s. 6d.

Dartmouth Ferry.—The Western Region ferry steamer, *Mew*, which since 1908 has maintained the ferry service between Kingswear and Dartmouth, Devon, is to be replaced from October 8 and until further notice by the diesel vessel, *Lady Elizabeth*. Chartered by the Western Region from the Millbrook Steamboat & Trading Company, Plymouth, the *Lady Elizabeth* will carry 127 passengers, 60 of whom can be accommodated in the cabin.

Philips New Heavy-Duty Spot Welder.—A new heavy-duty spot welding machine, the P.E.-1020, has been evolved by Philips Electrical Limited. The machine has been specially designed for spot welding mild steel plate up to $\frac{1}{2}$ in. plus $\frac{1}{2}$ in. thickness. The machine is also suitable for spot welding light alloys up to 16 s.w.g. and when used in conjunction with Philips Tempomat synchronous time control equipment is suitable for welding stainless and Nimonic steels. The machine is fully automatic for both single and repeat operation, and accurate repetition is ensured of any pre-determined welding sequence. Welding speed on repeat is said to be up to 100 spots a minute. Welding pressure is applied by means of an air cylinder, which incorporates a built-in adjustable air switch. Three sizes of machine are available, 18 in., 24 in. and 30 in.; a high lift head can be fitted.

Hurst, Nelson & Co. Ltd. Results.—The initial consolidated accounts of Hurst, Nelson & Co. Ltd. for the year to March 31 last show a trading profit of £64,381. The net profit of the parent company, after tax, amounted to £34,455 (against £40,173 for the previous year) and £85,973 was brought forward. The dividend on the ordinary shares for the year is reduced from 15 to 12½ per cent, but the distribution from capital profits, not subject to tax, is raised from 2½ per cent to 5 per cent. £87,098 is carried forward. The Chairman & Managing Director, Mr. Arthur N. Forman, states in his annual review that the restrictive effect of shortages in steel supplies continued during part of the year. The heavy burdens, he continues, imposed by taxation continue as an impediment to the accumulation out of revenue of resources essential to effective progress and expansion. By the beginning of the current year the intake of steel supplies had greatly increased, and the firm has since been productively engaged to an extent approaching full capacity.

September 17, 1954

Railway Stock Market

Although less buoyant because buyers were tending to await developments in international affairs, business in stock markets remained substantial. After an earlier small reaction, leading industrial shares attracted renewed demand later, and British Funds strengthened. Reports from the chemical and other industries that earnings are continuing to run at a higher level have helped sentiment, because they show that a wide range of companies will be able to report profits for the current year above the good levels achieved in 1953. Net profits in many cases will reflect the end of E.P.L.; so widespread hopes of higher dividends are soundly based, though it can be argued that the prospect of these further increases probably is already quite fully discounted in markets by the big rise in share prices in the past few months.

Foreign and overseas rails again attracted only moderate attention, but Canadian Pacifics were favoured on talk of higher dividend possibilities and strengthened to 47 with the 4 per cent preference stock at £68½ and the 4 per cent debentures £92½. Algoma Central & Hudson Bay 5 per cent income debentures were £252½, and Calgary & Edmonton 4 per cent debentures changed hands up to £90, while Quebec Central capital stock transferred at £97.

On the other hand, there has been some further selling of White Pass no par value shares, which eased to £30. The convertible debentures were £105 x.d. and the loan stock £33.

Emu Bay 4½ per cent debentures were £64½. Midland of Western Australia ordinary stock changed hands around 25 and the 4½ per cent debentures were 92½.

Nyasaland Railways 3½ per cent debentures have been dealt in at 80½ and the £1 shares were again quoted at 5s. 9d.

Speculators who recently bought Dorada Railway ordinary stock were selling, and the price receded to 78. Chilian Northern 5 per cent debentures showed activity up to 29½. Costa Rica ordinary stock transferred at 11½ and the 6½ per cent debentures at 67½.

There has been steadiness in Antofagasta stocks with the ordinary at 8½ and the preference 43. Taltal Railway ordinary stock has been firmer at 13s. 6d. with Nitrate Rails shares 19s. 9d. and San Paulo units 3s. 6d.

Mexican Central "A" debentures showed steadiness at 72. Guayaquil & Quito 5 per cent bonds were 58. Paraguay Central 6 per cent debentures remained at 20½.

Road transport shares remained rather more active and held recent gains, but buyers found that in many cases they are held so tightly that they are in short supply and not easy to obtain in any amount at current prices. Southdown were 36s. 6d., West Riding 35s. 6d., Lancashire Transport 61s., and Devon General 32s. 6d. East Kent were 28s. 9d., Ribble Motor 37s. 6d., Trent Motor Traction 38s. 9d., and Potteries Motor Traction 31s. 3d. B.E.T. 5s. "A" 5s. deferred units remained an active market, and though best levels were not held, were higher on the week at 62s.

In engineering and kindred sections there has been the very heavy oversubscription of Vickers' issue of 4 per cent loan stock, which was offered to stockholders at £98½ per £100 of stock. Total applications were £143,000,000 and because of this big rush, applicants were allotted only about 4 per cent of amounts applied for. In initial dealings there was a premium of as much as £2 over the issue

price, but later it declined to 33s. 9d. Vickers ordinary units were active and higher at 40s. 9d. in front of the interim dividend announcement, while the new ordinary units were 12s. 7½d. premium over the price of 27s. 6d. at which they were issued to stockholders.

Higher dividend hopes were responsible for a jump in Tube Investments to 74s. 9d., but elsewhere, T. W. Ward at 56s. 6d. reflected profit taking after their recent further advance. Babcock & Wilcox were firm at 62s. 9d. Guest Keen eased to 62s. 9d. Ruston & Hornsby have been steady at 53s. 3d.

Among shares of locomotive builders and engineers, Beyer Peacock eased to 45s. 3d. and Charles Roberts 5s. shares to 9s. 1½d. Hurst Nelson were 42s. North British Locomotive 15s. and Birmingham Carriage 26s. 6d. Vulcan Foundry were 29s. 9d., Gloucester Wagon 10s. shares 20s. 6d. and Wagon Repairs 5s. shares 13s. 9d.

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

QUANTITY SURVEYOR/ESTIMATOR required. Permanent position with accommodation offered to suitably qualified man. Apply to The Eagle Construction Co., Ltd., Scunthorpe, Lincs.

LONDON TRANSPORT require temporary technical assistant, office of the Assistant Civil Engineer (Permanent Way). Knowledge of permanent way design, drawing office experience, grounding in civil engineering, strong mathematical abilities, ability to use theodolite and level and make land surveys. Students of Institution of Civil Engineers preferred but young graduates without experience considered. Salary £343.10.0 at 21 rising to £613.10.0 subject to satisfactory service, with additional payments for certain recognised qualifications; medical examination. Applications to STAFF OFFICER (F/EV/281), London Transport, 55, Broadway, S.W.1. For acknowledgement enclose addressed envelope.

DE SIGNING DRAUGHTSMAN GRADE II required by the EAST AFRICAN RAILWAYS AND HARBOURS ADMINISTRATION for one tour of 40/48 months with prospect of permanency. Salary scale (including temporary allowances of 35 per cent of salary) £958 rising to £1,012 a year with free quarters or an allowance in lieu. Outfit allowance £30. Free passages. Liberal leave on full salary. Candidates must have served a full apprenticeship to locomotive or mechanical engineering and have had mechanical experience with British Railways or a locomotive builder. They must have at least three years Drawing Office experience in the design of locomotives and their components, and must also have experience of the Mechanical Handling equipment in use at ports and railway depots. Write to The Crown Agents, 4, Millbank, London, S.W.1. Stating age, Name in block letters full qualifications and experience and quote M2A/30519/RA.

VACANCIES FOR ENGINEERS, SOUTH AFRICAN STATE RAILWAYS. Vacancies for Junior/Auxiliary Engineers exist in the Civil, Mechanical and Auto Engineering Departments of the South African State Railways, and qualified persons desirous of being considered in connection with the filling thereof must submit their applications, containing full particulars of qualifications held, experience, age, married status, etc., to the S.A.R. Recruiting Mission, Room 346, South African House, Trafford Square, London, W.C.2. A degree in civil or mechanical engineering, as the case may be, is required, and applicants must preferably be under 30 years of age. The appointments are graded as follows:—Junior Engineer, £480 x £50—£580 p.a.; Assistant Engineer, £650 x £50—£950 x £40—£1,030; plus cost of living allowance, the present rate being £352 to £110 p.a. for married and single servants, respectively. Attractive conditions of service, including free passage to South Africa, are offered. Apply to the above mentioned address for fuller details.

RAILWAY MATERIAL. Plain Sleepers, Chaired Sleepers, Rafts of all Sections, Crossing Timbers. We undertake the supply and laying of all classes of siding installations.—The Railroad Plant Supplies Co. Ltd., 13 Waterloo Road, Wolverhampton. Telephone No. Wolverhampton 23617.

THE High Commissioner for India invites tenders for the supply of—50 pairs of Wheels and Axles for M/C type wagons, metre gauge, width 9-in. x 4½ in. journals. IRS DRG. NO. WA. 35 alt. 6, and IRS Specification No. R/19/53. 64 pairs of Wheels and Axles (M.C.) 7-in. x 4-in. journal. IRS DRG. NO. WA. 41 alt. 7 and IRS Specification No. R/19/53. Forms of tender may be obtained from the Director-General, India Store Department, 32/44 Edgware Road, London, W.2, on or after 17th September, 1954, at a fee of 10s. which is not returnable. If payment is made by cheque, it should please be made payable to "High Commissioner for India." Tenders are to be delivered by 2 p.m. on Friday, 15th October, 1954. Please quote reference No. 198/54/DH/RLY. 3.

THE High Commissioner for India invites tenders for the supply of—10 Inner fireboxes for AWC Class locomotive boilers, steel of welded construction complete with brick arch tubes suitable for coal burning and a working pressure of 225 lbs. per sq. inch and in accordance with the attached particular specifications. IRS. SPECS. R.29, R.32. DRGS. Nos. 144-S-97844C 144-S-978450 454-S-29310 143-S-109610 130-S-500576. Forms of tender may be obtained from the Director-General, India Store Department, 32/44, Edgware Road, London, W.2, on or after 19th September, 1954, at a fee of 10s. which is not returnable. If payment is made by cheque, it should please be made payable to "High Commissioner for India." Tenders are to be delivered by 2 p.m. on Friday, 15th October, 1954. Please quote reference No. 143/54/DH/RLY. 3.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press, Limited, 33, Tothill Street, London, S.W.1.

Forthcoming Meetings

September 18 (Sat.).—British Railways, Southern Region, Lecture & Debating Society. Visit to the R.E. Transportation Centre at Longmoor.

September 18 (Sat.).—Permanent Way Institution, London Section: Visit to Longmoor Military Railway, Hants.

September 22 (Wed.).—Locomotive Society of Scotland, at 302, Buchanan Street, Glasgow, C.2, at 7.15 for 7.30 p.m. Paper on "The Locomotive Trials in Relation to British Standard Locomotives," by Mr. Alfred Oliver.

September 22 (Wed.).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, 1, Birdcage Walk, London, S.W.1, at 5.30 p.m. Presidential address by Mr. A. Campbell.

September 22 (Wed.).—East Indian Railway Officers' Association Annual Dinner at the Connaught Rooms, Great Queen Street, Kingsway, W.C.2, at 6.30 for 7 p.m.

Until September 25 (Sat.).—"Popular Carriage" Exhibition (Two centuries of carriage design for road and rail) in the Shareholders' Meeting Room, Euston Station, London, N.W.1. Weekdays 10 a.m. to 7 p.m.; Sundays 2 to 7 p.m.

September 30 (Thur.).—University of London, Weekly Extension Lectures on "Our railway heritage: Studies in railway geography and history," at the Literary Institute, Stukeley Street, Drury Lane, London, W.C.2, at 6.30 p.m.

October 1 (Fri.).—Railway Club, at 57, Fetter Lane, London, E.C.4, at 7 p.m. Paper entitled "The evolution of the block telegraph," by Mr. T. S. Lascelles.

October 1 (Fri.).—Borough Polytechnic, Borough Road, London, S.E.1, at 7 p.m. First of 24 lectures on electric traction. Introduction by Mr. C. M. Cock, English Electric Co. Ltd.

October 2 (Sat.).—Permanent Way Institution, London Section. Joint meeting with Irish Section in Ireland. Paper, illustrated by lantern slides on "Maintaining railways across the Fens," by Mr. R. F. Bonny.